

低功率射頻器材試驗報告



申請廠商 鴻海精密工業股份有限公司
新北市土城區中山路66號
製造廠商 鴻海精密工業股份有限公司
產品名稱 802.11 2x2 b/g/n Wireless Module
廠牌 Foxconn
型號 WFU032-SPMY
型號差異 N/A
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Approved By:

陳俊傑

陳俊傑

待測裝置已於台灣檢驗科技股份有限公司射頻實驗中心，依據國家通訊傳播委員會於中華民國一百零九年七月頒佈之低功率射頻器材技術規範 LP0002 測試。

台灣檢驗科技股份有限公司根據此條文規範項目測試，測試各項數據皆能符合此規範規定之限度值。

報告中所描述之測試結果和待測設備的架構組合，均根據實際量測情況作詳實的記錄，且本測試報告僅對上述待測樣品負責。

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Revision History

Report Number	Revision	Description	Issue Date	Revised By
ER/2021/80032	00	Original.	民國 110 年 10 月 7 日	郭玉婷

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1 測試實驗室資料

1.1 認可登錄資訊:

實驗室認可登錄： 中華民國實驗室認證體系

認可編號： TAF 3702

認證有效期間： 110年06月14日起至113年06月13日止

實驗室名稱： 台灣檢驗科技股份有限公司射頻實驗中心

實驗室地址： 新北市新北產業園區五工路134號

電話： 886-2-22993939

傳真： 886-2-22982698

1.2 實驗室場地資訊

測試場地	測試場地編號		
新北市新北產業園區五工路 134 號	SAC 1	SAC 3	Conduction 1
	Conducted 1	Conducted 2	Conducted 3
	Conducted 4	Conducted 5	Conducted 6
桃園市龜山區(華亞科技園區)科技一路 2 號	SAC C	SAC D	SAC G
	Conduction C	Conducted A	Conducted B
	Conducted C	Conducted D	Conducted E
	Conducted F	Conducted G	
註: 測試場地編號記錄於每項測試之儀器清單, 用以表示測試場地地址。			

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2 實驗室量測不確定度

量測項目	量測不確定度			
	(擴充不確定度)			
傳導干擾量測	電源線	0.15-30MHz	2.34	dB
輻射干擾量測 (3m 測距)	水平極化	9kHz - 30MHz	2.64	dB
		30-1000MHz	4.45	dB
		1-18GHz	4.81	dB
		18-40GHz	4.52	dB
	垂直極化	9kHz - 30MHz	2.64	dB
		30-1000MHz	4.93	dB
		1-18GHz	4.81	dB
		18-40GHz	4.52	dB
頻率誤差量測			1.53	Hz
輸出功率	傳導方式		1	dB
有效輻射功率 (輻射方式)	水平極化	30-1000MHz	2	dB
		1-40GHz	3	dB
	垂直極化	30-1000MHz	2.33	dB
		1-40GHz	3	dB
功率頻譜密度	傳導方式		1.53	dB
鄰頻道功率量測 (輻射方式)	水平極化	30-1000MHz	2	dB
	垂直極化	30-1000MHz	2.33	dB
Transmitter Spurious Emission	33GHz-50GHz		3.8	dB
	50GHz-60GHz		4.67	dB
	60GHz-90GHz		4.81	dB
	90GHz-140GHz		4.57	dB
	140GHz-200GHz		5.42	dB

附註: 1. K=2 即代表測試結果具有95%的量測可信度。

2. 本報告中的符合性判定僅依據試驗結果，不考慮其試驗結果的量測不確定度。

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3 一般資料

3.1 產品描述

產品名稱	802.11 2x2 b/g/n Wireless Module
廠牌	Foxconn
型號	WFU032-SPMY
型號差異	N/A
使用電源	5Vdc

3.2 射頻特性

WLAN 2.4GHz

Wi-Fi	Frequency Range	Channels	Rated Power in dBm (Peak)	Modulation Technology
802.11b	2412~2462	11	17.46	DSSS
802.11g	2412~2462	11	24.76	OFDM
802.11n20	2412~2462	11	23.51	OFDM
802.11n40	2422~2452	7	21.76	OFDM
Modulation type:		CCK, DQPSK, DBPSK for DSSS		
		64QAM, 16QAM, QPSK, BPSK for OFDM		
		64QAM, 16QAM, QPSK, BPSK for OFDM		
Data Rate:		802.11 b: 1/2/5.5/11 Mbps		
		802.11 g: 6/9/12/18/24/36/48/54 Mbps		
		802.11 n_20MHz:6.5 - 144.4Mbps		
		802.11 n_40MHz:13.5 - 300Mbps		

3.3 天線資訊

Antenna Type	Brand	Antenna Model No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Directional Gain (dBi)
PCB	Foxconn	WFU032-SPMY	2412-2462	1.96	4.44
			2412-2462	0.86	4.44

Note:

1. Pre-scanned was done on the above antennas, measurements were demonstrated by using the antenna with the highest gain as the worst case scenarios.
2. Antenna information is provided by the applicant.

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4 產品特性

此裝置符合IEEE Std 802.11標準，使用頻率表如下：

頻寬 20MHz 調變	
頻率範圍 2400 MHz – 2483.5 MHz	
2412	2442
2417	2447
2422	2452
2427	2457
2432	2462
2437	

頻寬 40MHz 調變	
頻率範圍 2400 MHz – 2483.5 MHz	
2422	2442
2427	2447
2432	2452
2437	

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5 測試方法之依據

本測試報告之所有項目皆依據國家通訊傳播委員會低功率射頻器材技術規範(LP0002, 109.7.1 版本)如無國家標準可適用者，得依美國 EIA、IEEE ANSI 檢驗法檢驗，及美國 FCC 47 CFR Part 2 有關檢驗之規定及參考 ANSI C63.10:2013、FCC CFR 47 15.247 之檢驗法。

項次	測試項目	適用規範	測試結果
1	場強輻射	低功率射頻器材技術規範 3.5 & 3.6 節	符合
2	電源線傳導干擾	低功率射頻器材技術規範3.3節	符合
3	天線增益要求	低功率射頻器材技術規範4.10.1.3 (1) 節	符合
4	發射頻寬	低功率射頻器材技術規範4.10.1.6(2) (A) 節	符合
5	輸出峰值功率	低功率射頻器材技術規範4.10.1.2(1) (C) 節	符合
6	帶外發射限制	低功率射頻器材技術規範4.10.1.5節	符合
7	功率密度	低功率射頻器材技術規範4.10.1.6(2) (B) 節	符合

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6 量測模式

1. The EUT has been tested under operating condition.
2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
3. Investigation has been done on all the possible configurations for searching the worst case.

The given UE is pre-scanned among below modes.

Modulation	Transmission Chain				Single Transmission Spatial	Multiple Transmission Spatial
☒ 802.11 b	☒ Ch0	☒ Ch1	☐ Ch2	☐ Ch3	☐ 1TX	☒ 2TX
☒ 802.11 g	☒ Ch0	☒ Ch1	☐ Ch2	☐ Ch3	☐ 1TX	☒ 2TX
☒ 802.11 n	☒ Ch0	☒ Ch1	☐ Ch2	☐ Ch3	☐ SISO	☒ MIMO
☐ 802.11 ax	☐ Ch0	☐ Ch1	☐ Ch2	☐ Ch3	☐ SISO	☐ MIMO

4. Therefore, below summary is the modes of test configuration that yield the highest reading and generate the highest emission chosen to carry out the relevantly mandatory test items.

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Conducted					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 11	1,6,11	DSSS	1	2TX
802.11g	1 to 11	1,6,11	OFDM	6	2TX
802.11n (HT20)	1 to 11	1,6,11	OFDM	MCS8	MIMO
802.11n (HT40)	3 to 9	3,6,9	OFDM	MCS8	MIMO
RADIATED EMISSION TEST (BELOW 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11g	1 to 11	1,6,11	OFDM	6	2TX
802.11n (HT40)	3 to 9	3,6,9	OFDM	MCS8	MIMO
RADIATED EMISSION TEST (ABOVE 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 11	1,6,11	DSSS	1	2TX
802.11g	1 to 11	1,6,11	OFDM	6	2TX
802.11n (HT20)	1 to 11	1,6,11	OFDM	MCS8	MIMO
802.11n (HT40)	3 to 9	3,6,9	OFDM	MCS8	MIMO

Note:

The field strength of radiation emission was measured as EUT three orthogonal planes, E1 / E2 / H, are positioned to pre-scan the emission generating the highest one. The worst position is tested and recorded.

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No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan/新北市五股區新北產業園區五工路 134 號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.sgs.com.tw

7 測試配置

7.1 待測物與測試週邊配置圖

Conducted (Antenna Port)



Radiated Emission & Conduction (AC power line) Emission



7.2 測試週邊

編號	產品別	商標	版本	型號	序號
1.	Test Software	KEYSIGHT	N/A	IOT0047A	21.8.12.18
2.	Notebook	Lenovo	N/A	X250	PC-06A4E7
3.	Notebook	Lenovo	N/A	L480	PF-1S9NT5 19/07
4.	Adapter	Lenovo	N/A	ADLX45YCC3D	N/A
5.	USB3.0	BENEVO	N/A	BUSB0300AMF	N/A
6.	USB3.0	MAGIC	N/A	UF3AMAF-018K	N/A

註:測試週邊編號 5、編號 6 為測試治具。

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8 適用規範

禁用頻帶限制之規定

依據NCC低功率射頻器材技術規範3.5節之要求，任何低功率射頻器材之主波皆不得使用下表所列各頻帶內之頻率；低功率射頻器材落於下表所列頻帶內之混附發射，其電場強度必須符合第3.6節的限制規定。

頻率 (MHz)	頻率 (MHz)	頻率 (MHz)
0.090~0.110	240.00~285.00	3332.0~3339.0
0.490~0.510	322.00~335.40	3345.8~3358.0
2.172~2.198	399.90~410.00	3500.0~4400.0
3.013~3.033	485.00~510.00	4500.0~5250.0
4.115~4.198	608.00~614.00	5350.0~5460.0
5.670~5.690	703.00~748.00	7250.0~7750.0
6.200~6.300	758.00~803.00	8025.0~8500.0
8.230~8.400	825.00~915.00	9000.0~9200.0
12.265~12.600	930.00~1240.0	9300.0~9500.0
13.340~13.430	1300.0~1427.0	10600~12700
14.965~15.020	1435.0~1626.5	13250~13400
16.700~16.755	1660.0~1785.0	14470~14500
19.965~20.020	1805.0~1880.0	15350~16200
25.500~25.700	1885.0~1900.0	17700~21400
37.475~38.275	1905.0~1985.0	22010~23120
73.500~75.400	2010.0~2025.0	23600~24000
108.00~138.00	2110.0~2170.0	31200~31800
149.90~150.05	2200.0~2300.0	36430~36500
156.70~156.90	2310.0~2390.0	38600 以上
162.01~167.17	2483.5~2900.0	
167.72~173.20	3260.0~3267.0	

依據 NCC 低功率射頻器材技術規範 3.9 節之要求，收、發信機為成套銷售者，收、發信機應一併送審或提供經型式認證合格之對應收、發信機之送審資料；送信機之輻射電場強度不得超過第 3.6 節之發射規定，且不得接收、解調第 3.5 節所列之頻率。

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9 電源線傳導干擾量測

9.1 適用標準

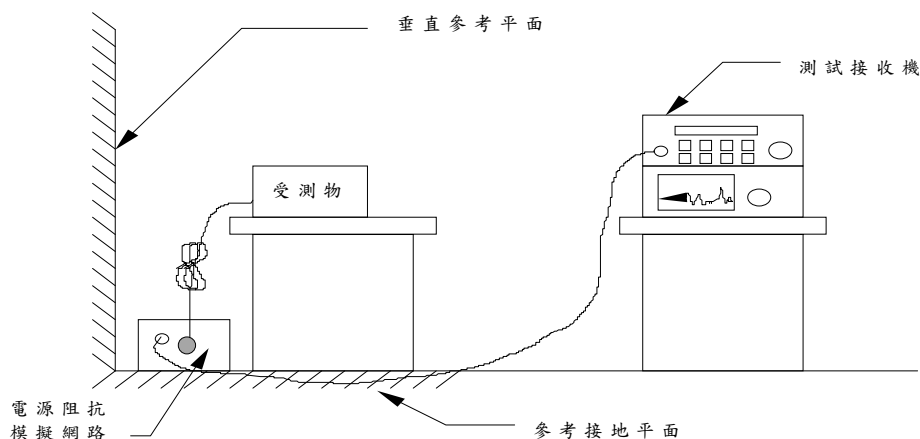
依據NCC低功率射頻器材技術規範之3.3節，以市電為電源之低功率射頻器材，其傳導回電源線上頻率自150 kHz~30 百萬赫(MHz) 之射頻電壓(在電源端子每一電源線對接地點)應小於或等於下表所列之限制值。測量時應經過50 微亨利(uH)及50 歐姆(Ω)之電源線阻抗穩定網路。頻率重疊處，以較低限制值為準。

頻率(MHz)	傳導限制值 (dBuV)	
	準峰值 (Quasi – peak)	平均值 (Average)
0.15 – 0.5	66 – 56	56 - 46
0.5 – 5	56	46
5 - 30	60	50

9.2 測試方法

將待測物置於0.8米高的非金屬桌面，使其在工作狀態，待測物電源線接至電源線阻抗穩定網路上，從測試接收機記錄頻率由 0.15MHz 至 30MHz 之間之電源線傳導放射強度的峰值量側(Peak)並提供掃描圖, Mark 最大的六個頻率點進行準峰值量測(QP),如果準峰值QP結果值已低於AV限制值時將不再進行AV值的量測。

9.3 測試配置



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9.4 量測儀器

Conducted Emission Test Site: Conduction 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCI 7	100759	08/26/2021	08/25/2022
LISN	SCHWARZBECK	NSLK 8127	8127-465	04/09/2021	04/08/2022
Coaxial Cables	N/A	Coaxial Cable	161207	12/07/2020	12/06/2021
Test Software	audix	e3	Ver. 9 210322	N.C.R	N.C.R

9.5 干擾值計算

電源傳導干擾電壓計算公式 =

儀器讀值(QP/AV) + 校正因子 (饋線損失 + 電源阻抗模擬網路損失)

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9.6 傳導干擾量測結果

Report Number :ER-2021-80032

Test Site :Conduction 1

Test Mode :System

Test Date :2021-09-17

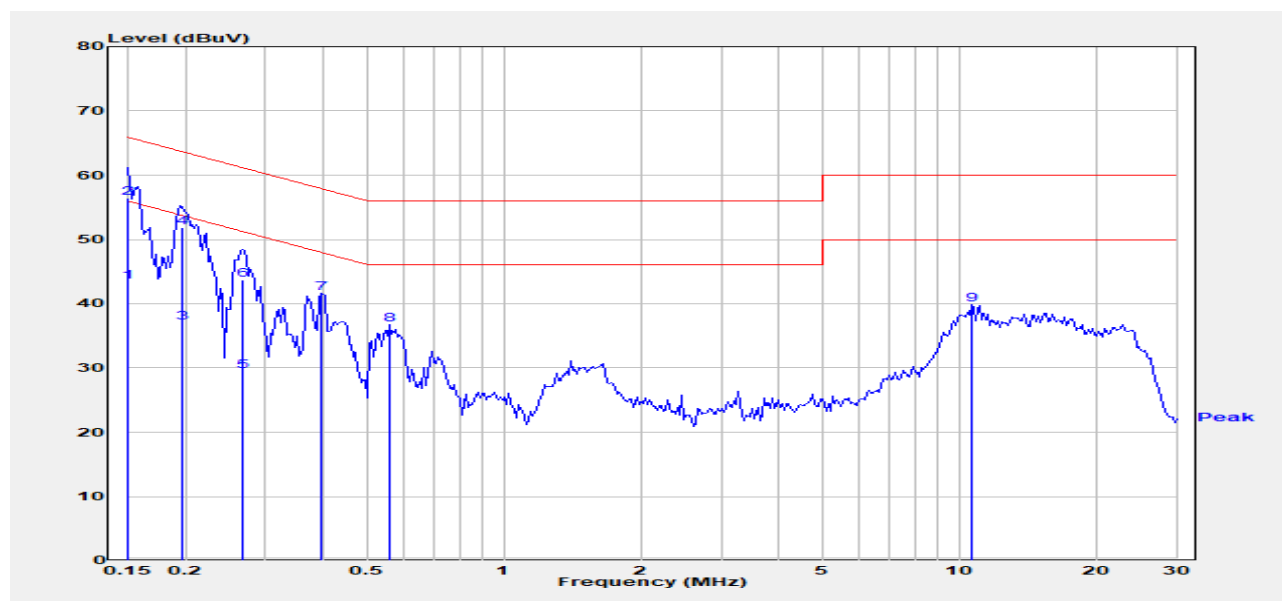
Power :110V/60Hz

Temp./Humi. :25.1/65

Probe :L

Engineer :Nick Lin

Note: :



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV	Limit dBμV	Margin dB
0.150	Average	41.27	2.12	43.39	56.00	-12.61
0.150	QP	54.37	2.12	56.49	66.00	-9.51
0.196	Average	34.91	2.12	37.03	53.77	-16.74
0.196	QP	49.67	2.12	51.79	63.77	-11.98
0.267	Average	27.42	2.12	29.54	51.21	-21.67
0.267	QP	41.58	2.12	43.70	61.21	-17.51
0.398	Peak	39.45	2.12	41.57	57.90	-16.33
0.564	Peak	34.59	2.12	36.71	56.00	-19.29
10.620	Peak	37.60	2.27	39.86	60.00	-20.14

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Report Number :ER-2021-80032

Test Site :Conduction 1

Test Mode :System

Test Date :2021-09-17

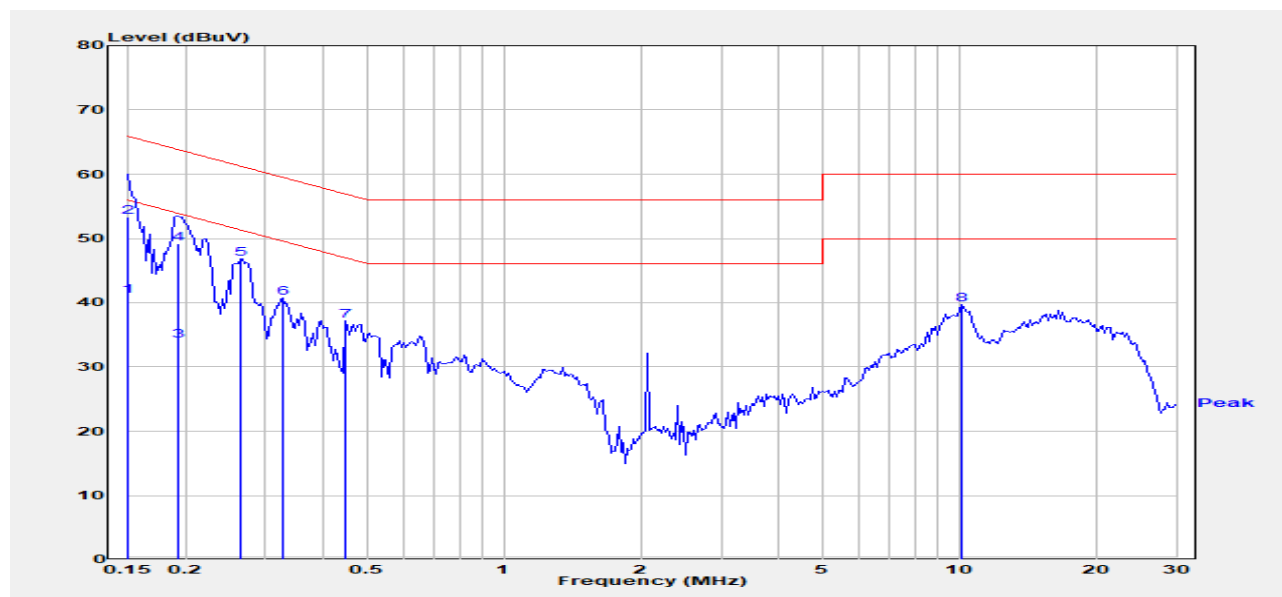
Power :110V/60Hz

Temp./Humi. :25.1/65

Probe :N

Engineer :Nick Lin

Note: :



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS		
	PK/QP/AV	dBμV	dB	dBμV	dBμV	dB
0.150	Average	38.88	2.12	41.00	56.00	-15.00
0.150	QP	51.27	2.12	53.39	66.00	-12.61
0.193	Average	31.78	2.28	34.06	53.89	-19.83
0.193	QP	46.88	2.28	49.16	63.89	-14.73
0.263	Peak	44.55	2.23	46.78	61.34	-14.56
0.329	Peak	38.50	2.17	40.67	59.49	-18.82
0.447	Peak	35.06	2.12	37.18	56.93	-19.76
10.179	Peak	37.41	2.27	39.68	60.00	-20.32

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10 輸出峰值功率量測

10.1 適用標準

依據 NCC 低功率射頻器材技術規範 4.10.1.2(1) (A)(C)之規定，操作於 2400-2483.5MHz 與 5725-5850MHz 之所有數位調變技術系統：1 Watt(含)以下。

依據NCC低功率射頻器材技術規範4.10.1.3之規定，用於非固定式點對點操作時，若其發射天線之方向性增益超過6dBi，應依所超過之dB數等量降低峰值輸出功率。如用於固定式點對點操作時，應符合下列情形之一：

依據NCC低功率射頻器材技術規範4.10.1.3 (1)之規定，操作於2400-2483.5MHz 者，僅用於固定式點對點操作，其發射天線之方向性增益超過 6dBi，每超過3dB應降低1dB之峰值輸出功率。

依據NCC低功率射頻器材技術規範4.10.1.3 (2)之規定，操作於5725-5850MHz 者，其發射天線之方向性增益超過 6dBi，無須降低峰值輸出功率。

依據NCC低功率射頻器材技術規範4.10.1.3 (3)之規定，用於點對多點操作時，如其發射天線之方向性增益超過 6dBi，應依所超過之dB數等量降低最大傳導輸出功率。

註：固定式點對點操作使用方式，並不包括使用點對多點之系統、全向性之應用以及發射相同資訊之共同安裝的多重發射機。展頻或數位調變之發射器需要專業安裝，該設備操作者或安裝者有責任確認該系統是限用於固定式、點對點之操作，隨機所附之使用手冊必須包含此訊息以告知使用者或安裝者須負之責任。

Note:

As per section F. 2). e). (ii) of FCC KDB 662911 D01

If antenna gains are not equal and each transmit antenna is driven by only one spatial stream, directional gain may be calculated by either of the following formulas.

$$\bullet \quad \text{Directional Gain} = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

NSS = the number of independent spatial streams of data;

NANT = the total number of antennas

$g_{j,k} = 10^{G_k/20}$ if the kth antenna is being fed by spatial stream j, or zero if it is not;

G_k is the gain in dBi of the kth antenna.

The antenna gain is not greater than 6 dBi. Therefore, reduction of power is not required.

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10.2 量測儀器

10.2.1 輸出峰值量測

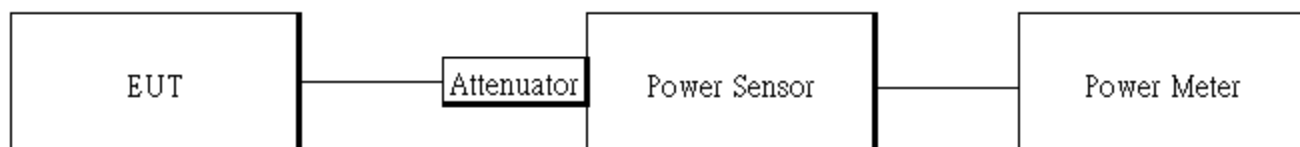
Conducted Emission Test Site: Conducted 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY59071571	05/26/2021	05/25/2022
Power Meter	Anritsu	ML2496A	1242004	11/06/2020	11/05/2021
Power Sensor	Anritsu	MA2411B	1207365	11/06/2020	11/05/2021
Power Sensor	Anritsu	MA2411B	1207368	11/06/2020	11/05/2021
Attenuator	Mini-Circuit	BW-S10W2+	4	12/16/2020	12/15/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	12/16/2020	12/15/2021
DC Block	Mini-Circuits	BLK-18-S+	1	12/16/2020	12/15/2021

10.2.2 載波頻率工作週期量測

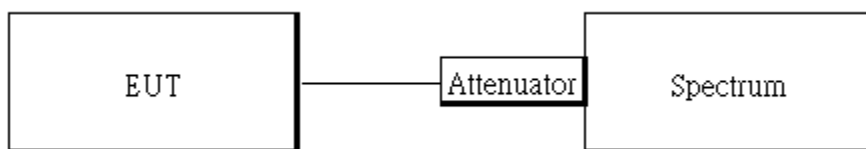
Conducted Emission Test Site: Conducted 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY59071571	05/26/2021	05/25/2022
Attenuator	Mini-Circuit	BW-S10W2+	2	12/16/2020	12/15/2021
DC Block	Mini-Circuits	BLK-18-S+	1	12/16/2020	12/15/2021

10.3 測試配置

10.3.1 輸出峰值量測



10.3.2 載波頻率工作週期量測



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10.4 量測方式

10.4.1 載波頻率工作週期儀器設定

Span = Zero, RBW = 8MHz, VBW = 8MHz, Detector = Peak

10.4.2 輸出功率量測

1. 將 EUT 置於發射模式。
2. 移除天線，使用 low loss cable 連接 EUT 的 antenna port 及 power meter。
3. 檢查每種模式的工作週期以補償工作週期校正因子 (Duty Factor)。
4. 紀錄最大功率讀值。
5. MIMO mode: offset is set with “measure and add 10 Log (N)” to measurement for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna, cable loss is specified below.

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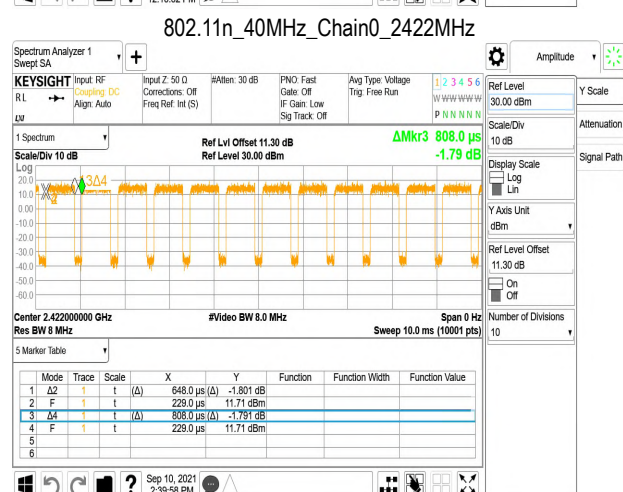
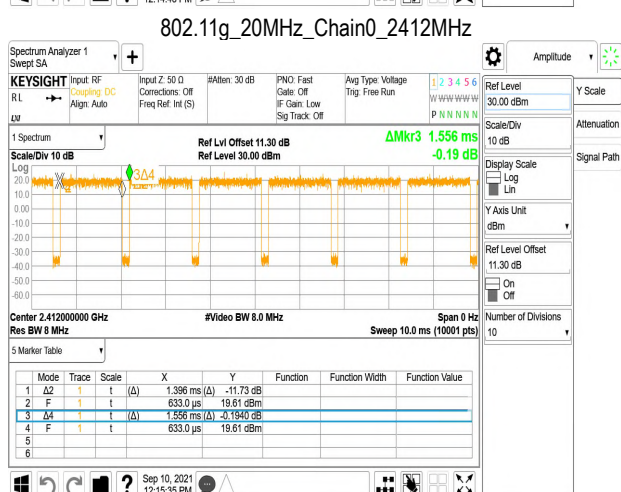
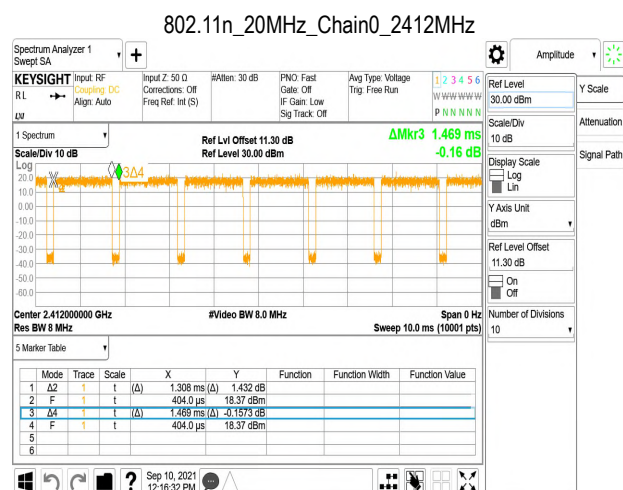
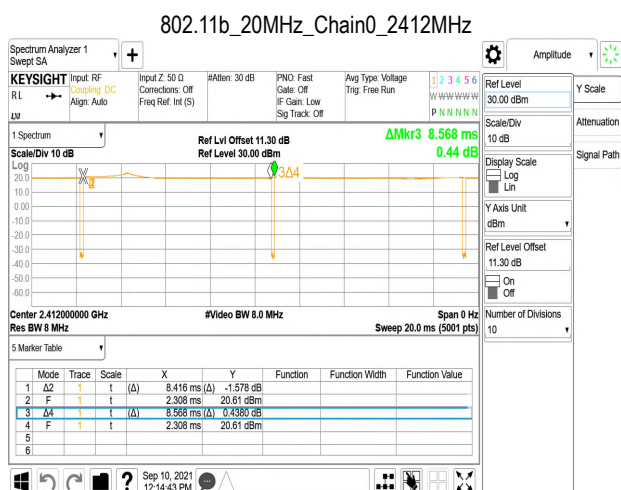
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10.5 量測結果

10.5.1 載波頻率工作週期

	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11b	98.23	0.08	0.12	0.01
802.11g	89.72	0.47	0.72	1.00
802.11n_20	89.04	0.50	0.76	1.00
802.11n_40	80.20	0.96	1.54	2.00



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10.5.2 輸出功率

802.11b Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	14	14.50	30.00	PASS
6	2437	1	14	14.22	30.00	PASS
11	2462	1	15	14.37	30.00	PASS
802.11b Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	1	14	12.37	30.00	PASS
6	2437	1	14	12.33	30.00	PASS
11	2462	1	15	12.38	30.00	PASS
802.11b Ch1						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	13	14.38	30.00	PASS
6	2437	1	13	14.16	30.00	PASS
11	2462	1	14	14.09	30.00	PASS
802.11b Ch1						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	1	13	12.23	30.00	PASS
6	2437	1	13	12.25	30.00	PASS
11	2462	1	14	12.22	30.00	PASS

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802.11b_2TX

CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
1	2412	1	13	14.51	14.39	17.46	30.00	PASS
6	2437	1	13	14.35	14.27	17.32	30.00	PASS
11	2462	1	14	14.39	14.15	17.28	30.00	PASS

802.11b_2TX

CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
1	2412	1	13	12.39	12.35	15.46	30.00	PASS
6	2437	1	13	12.48	12.32	15.49	30.00	PASS
11	2462	1	14	12.49	12.29	15.48	30.00	PASS

802.11g Ch0

CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	13	21.35	30.00	PASS
6	2437	6	13	21.49	30.00	PASS
11	2462	6	14	21.62	30.00	PASS

802.11g Ch0

CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	6	13	12.40	30.00	PASS
6	2437	6	13	12.44	30.00	PASS
11	2462	6	14	12.43	30.00	PASS

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802.11g Ch1						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	12	21.19	30.00	PASS
6	2437	6	13	21.29	30.00	PASS
11	2462	6	14	21.54	30.00	PASS
802.11g Ch1						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	6	12	12.28	30.00	PASS
6	2437	6	13	12.36	30.00	PASS
11	2462	6	14	12.37	30.00	PASS

802.11g_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
1	2412	6	12	21.38	21.23	24.32	30.00	PASS
6	2437	6	13	21.64	21.49	24.58	30.00	PASS
11	2462	6	14	21.94	21.55	24.76	30.00	PASS
802.11g_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
1	2412	6	12	12.12	11.82	15.45	30.00	PASS
6	2437	6	13	12.04	11.96	15.48	30.00	PASS
11	2462	6	14	12.08	11.94	15.49	30.00	PASS

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802.11n_HT20M Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	13	20.34	30.00	PASS
6	2437	MCS0	13	20.51	30.00	PASS
11	2462	MCS0	14	20.55	30.00	PASS
802.11n_HT20M Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	13	11.30	30.00	PASS
6	2437	MCS0	13	11.37	30.00	PASS
11	2462	MCS0	14	11.39	30.00	PASS
802.11n_HT20M Ch1						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	12	20.21	30.00	PASS
6	2437	MCS0	13	20.34	30.00	PASS
11	2462	MCS0	14	20.39	30.00	PASS
802.11n_HT20M Ch1						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	12	11.15	30.00	PASS
6	2437	MCS0	13	11.21	30.00	PASS
11	2462	MCS0	14	11.24	30.00	PASS

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802.11n_HT20M MIMO

CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
1	2412	MCS8	13	20.37	20.28	23.34	30.00	PASS
6	2437	MCS8	14	20.52	20.37	23.46	30.00	PASS
11	2462	MCS8	15	20.59	20.41	23.51	30.00	PASS

802.11n_HT20M MIMO

CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
1	2412	MCS8	13	11.20	10.66	14.45	30.00	PASS
6	2437	MCS8	14	11.07	10.84	14.47	30.00	PASS
11	2462	MCS8	15	11.04	10.92	14.49	30.00	PASS

802.11n_HT40M Ch0

CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	13	17.97	30.00	PASS
6	2437	MCS0	13	17.89	30.00	PASS
9	2452	MCS0	13	17.98	30.00	PASS

802.11n_HT40M Ch0

CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	13	8.60	30.00	PASS
6	2437	MCS0	13	8.61	30.00	PASS
9	2452	MCS0	13	8.54	30.00	PASS

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802.11n_HT40M Ch1

CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	12	16.89	30.00	PASS
6	2437	MCS0	13	17.21	30.00	PASS
9	2452	MCS0	13	17.04	30.00	PASS

802.11n_HT40M Ch1

CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	12	8.54	30.00	PASS
6	2437	MCS0	13	8.58	30.00	PASS
9	2452	MCS0	13	8.43	30.00	PASS

802.11n_HT40M MIMO

CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
3	2422	MCS8	14	18.50	17.83	21.19	30.00	PASS
6	2437	MCS8	15	19.21	18.23	21.76	30.00	PASS
9	2452	MCS8	14	18.57	17.39	21.03	30.00	PASS

802.11n_HT40M MIMO

CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
3	2422	MCS8	14	7.91	7.65	11.75	30.00	PASS
6	2437	MCS8	15	7.98	7.84	11.88	30.00	PASS
9	2452	MCS8	14	7.69	7.48	11.55	30.00	PASS

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11 發射頻寬要求

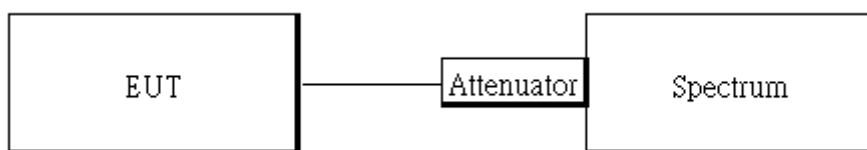
11.1 適用標準

對使用數位調變技術之低功率發射機，依據 NCC 低功率射頻器材技術規範 4.10.1.6(2) (A) 之規定，6dB 之頻寬至少應有 500kHz。

11.2 量測儀器

Conducted Emission Test Site: Conducted 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY59071571	05/26/2021	05/25/2022
Attenuator	Mini-Circuit	BW-S10W2+	2	12/16/2020	12/15/2021
DC Block	Mini-Circuits	BLK-18-S+	1	12/16/2020	12/15/2021

11.3 測試配置



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11.4 量測方法

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
4. Set the spectrum analyzer as
RBW= 100kHz ,
VBW = 3 X RBW,
Span= 2 to 5 times of the OBW,
Sweep=auto,
Detector = Peak, and Max hold for -6dB Bandwidth test.
5. Repeat above procedures until all test default channel is completed

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11.5 量測結果

802.11b Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	9130.00	≥ 500	PASS
2437	9578.00	≥ 500	PASS
2462	10050.00	≥ 500	PASS

802.11b Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	9574.00	≥ 500	PASS
2437	9591.00	≥ 500	PASS
2462	9579.00	≥ 500	PASS

802.11g Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	15120.00	≥ 500	PASS
2437	15130.00	≥ 500	PASS
2462	15140.00	≥ 500	PASS

802.11g Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	15100.00	≥ 500	PASS
2437	15120.00	≥ 500	PASS
2462	15140.00	≥ 500	PASS

802.11_n_HT20 Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	15130.00	≥ 500	PASS
2437	15140.00	≥ 500	PASS
2462	15140.00	≥ 500	PASS

802.11_n_HT20 Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	15110.00	≥ 500	PASS
2437	15130.00	≥ 500	PASS
2462	15150.00	≥ 500	PASS

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802.11_n_HT40 Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2422	35080.00	≥ 500	PASS
2437	35150.00	≥ 500	PASS
2452	35130.00	≥ 500	PASS

802.11_n_HT40 Ch1

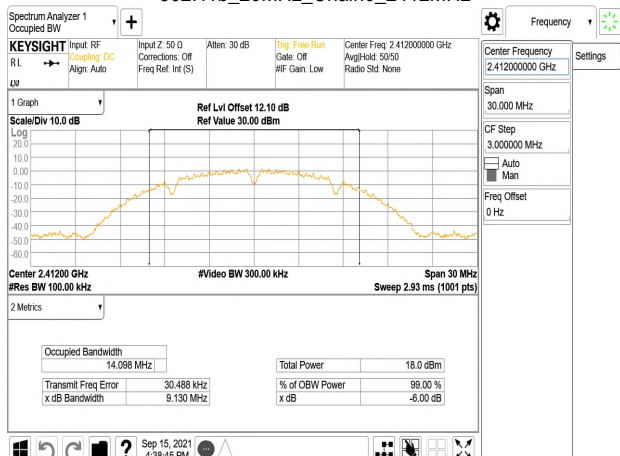
Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2422	32630.00	≥ 500	PASS
2437	35130.00	≥ 500	PASS
2452	35110.00	≥ 500	PASS

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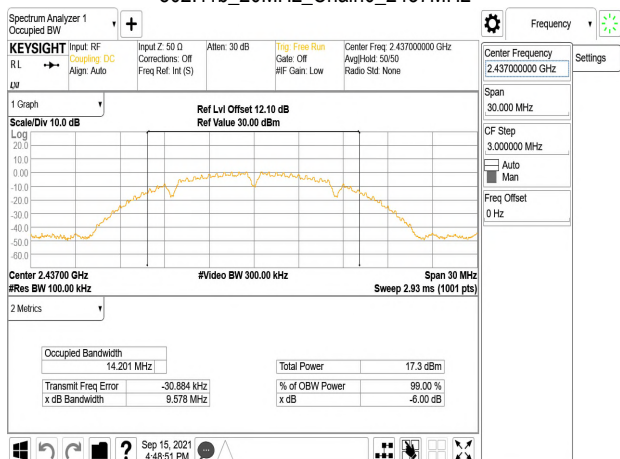
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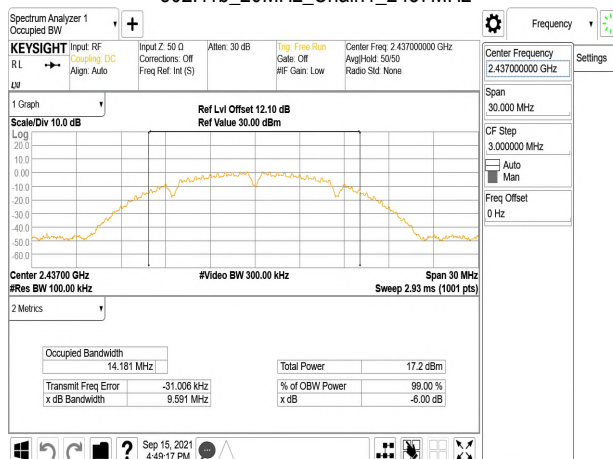
802.11b_20MHz_Chain1_2412MHz



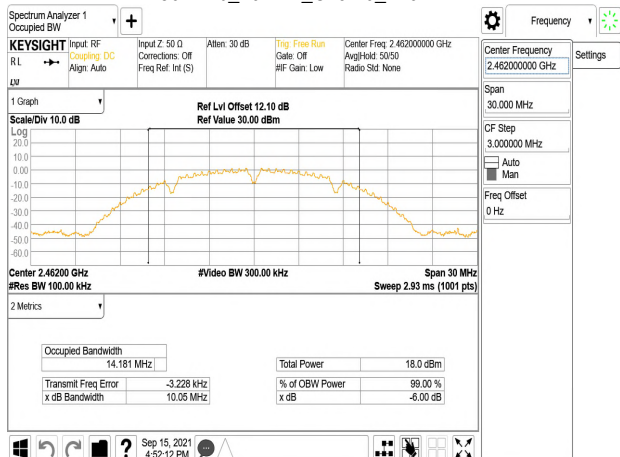
802.11b_20MHz_Chain0_2437MHz



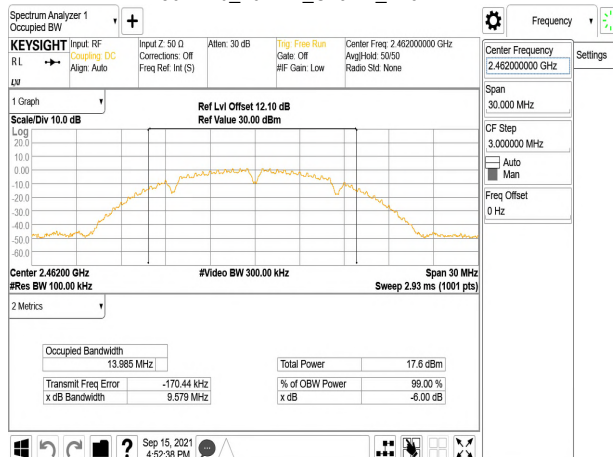
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802.11b_20MHz_Chain0_2462MHz



802.11b_20MHz_Chain1_2462MHz

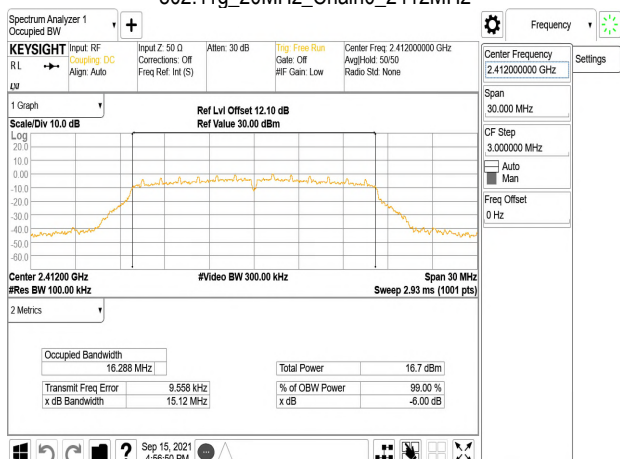


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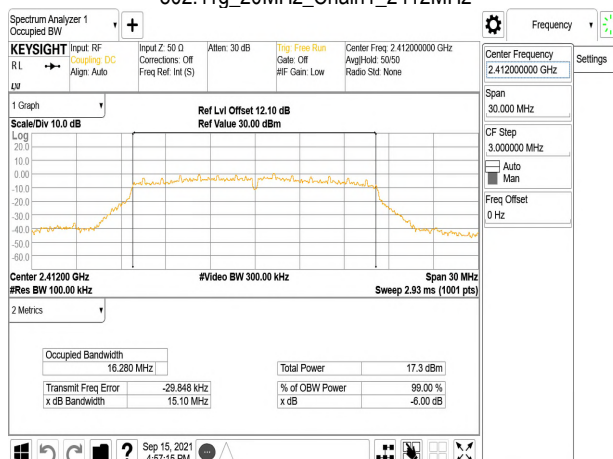
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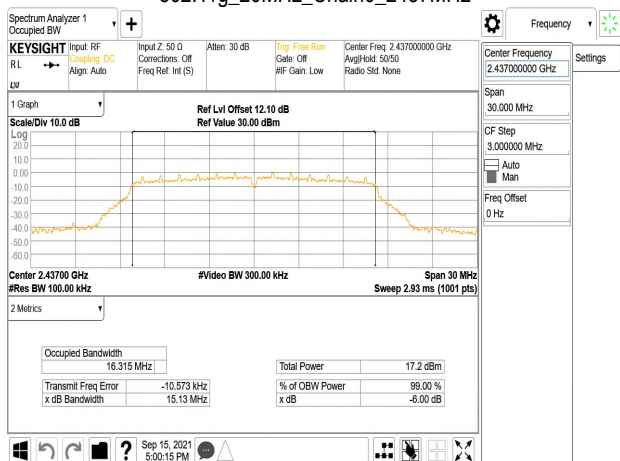
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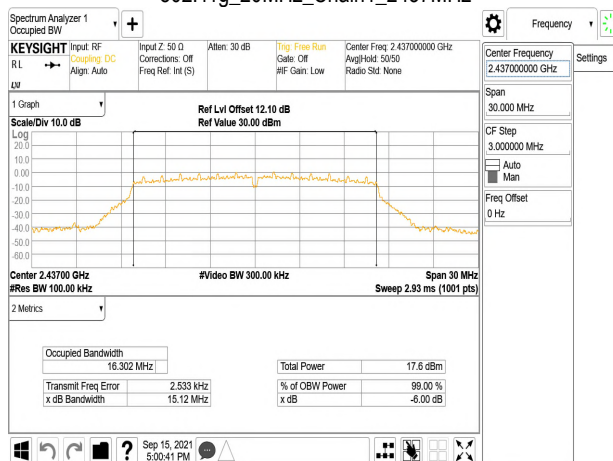
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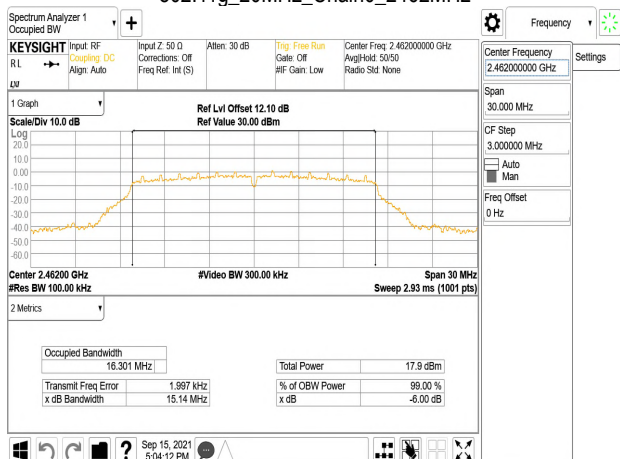
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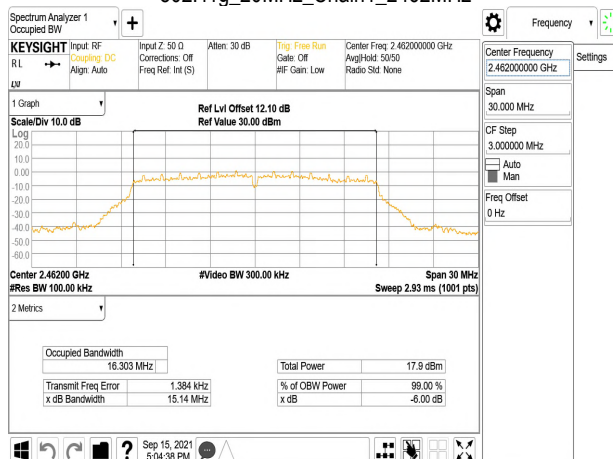
802.11g_20MHz_Chain1_2437MHz



802.11g_20MHz_Chain0_2462MHz



802.11g_20MHz_Chain1_2462MHz



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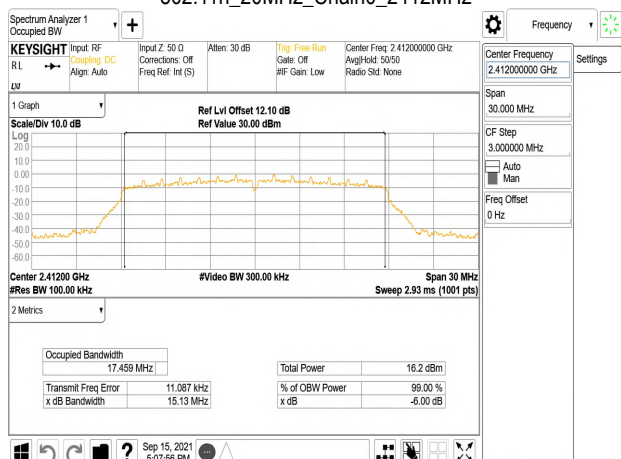
台灣檢驗科技股份有限公司

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan/新北市五股區新北產業園區五工路 134 號
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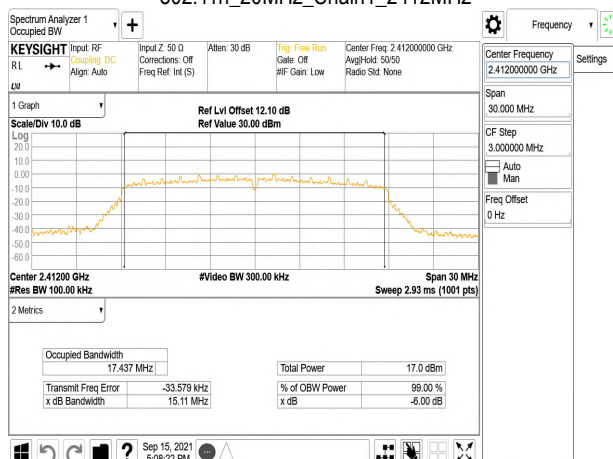
f (886-2) 2298-0488

www.sgs.com.tw

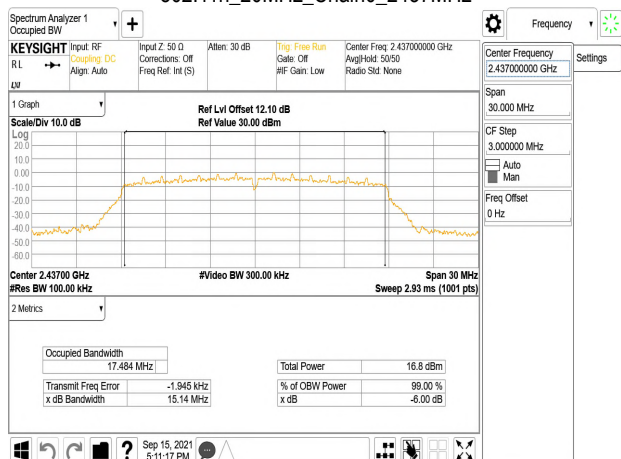
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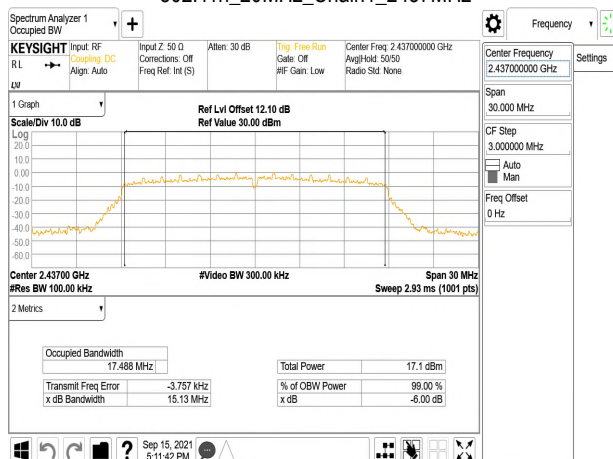
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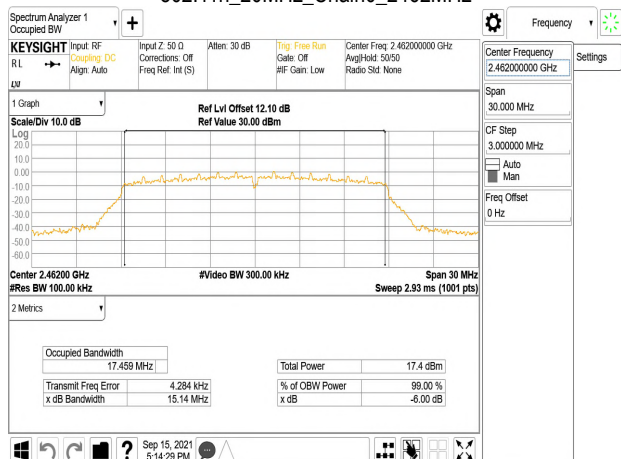
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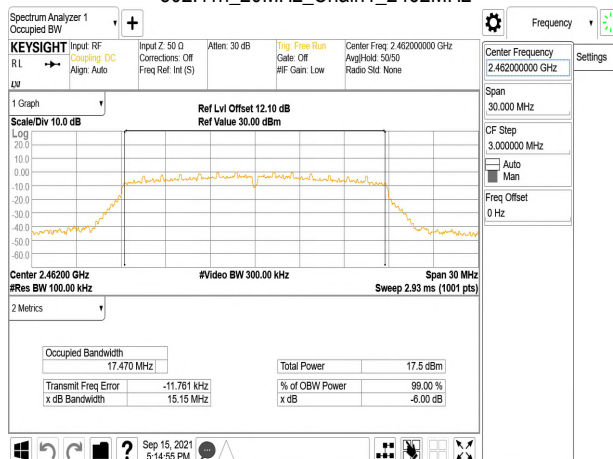
802.11n_20MHz_Chain1_2437MHz



802.11n_20MHz_Chain0_2462MHz



802.11n_20MHz_Chain1_2462MHz



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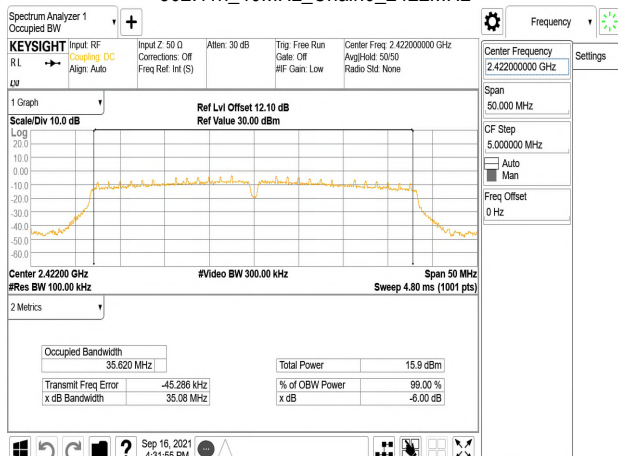
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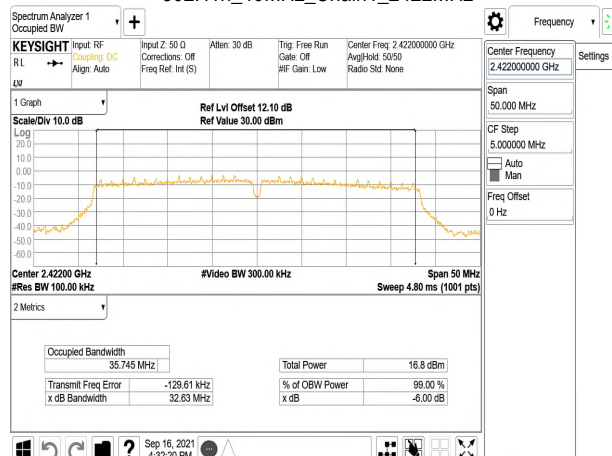
f (886-2) 2298-0488

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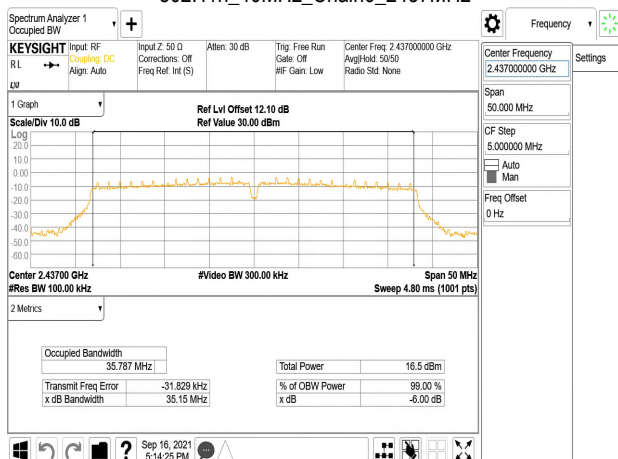
802.11n_40MHz_Chain0_2422MHz



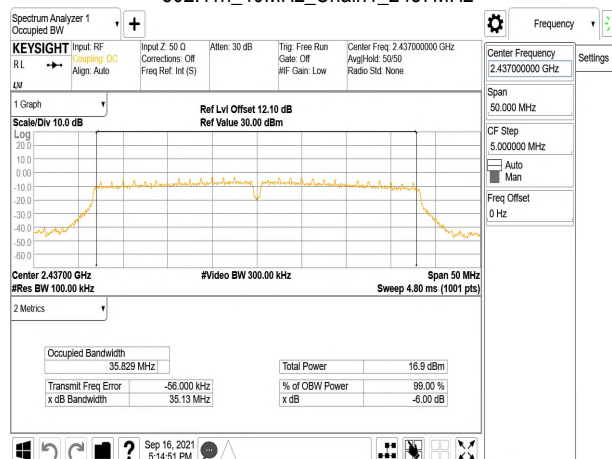
802.11n_40MHz_Chain1_2422MHz



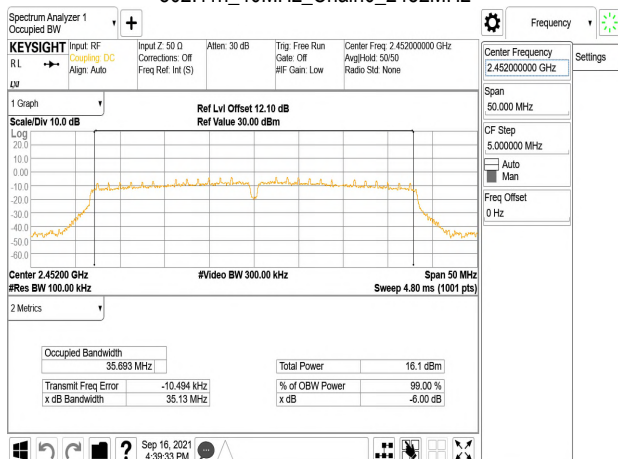
802.11n_40MHz_Chain0_2437MHz



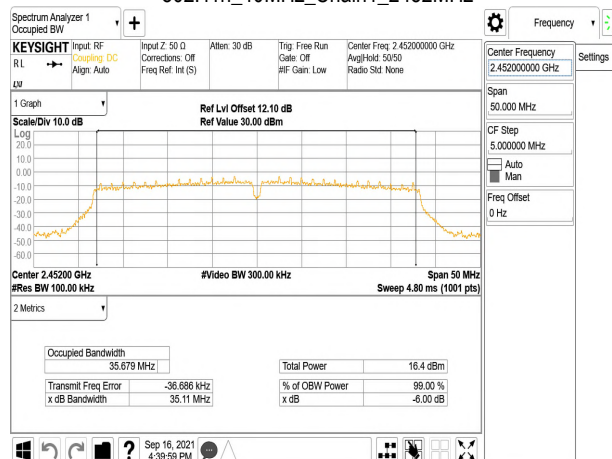
802.11n_40MHz_Chain1_2437MHz



802.11n_40MHz_Chain0_2452MHz



802.11n_40MHz_Chain1_2452MHz



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No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan/新
t (886-2) 2299-3279

f (886-2) 2298-0488

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12 帶外發射限制

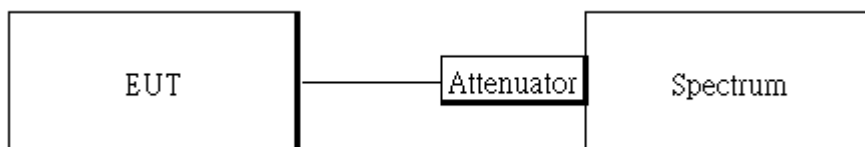
12.1 適用標準

依據 NCC 低功率射頻器材技術規範 4.10.1.5 之規定，操作頻帶範圍外之任意 100kHz 內，發射器所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之 100kHz 內的射頻功率，須衰減 20 分貝 (dB)，以射頻傳導或輻射方式測量。此外，落於第 3.5 節禁用頻段之輻射發射，應符合第 3.6 節之規定。

12.2 量測儀器

Conducted Emission Test Site: Conducted 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY59071571	05/26/2021	05/25/2022
Attenuator	Mini-Circuit	BW-S10W2+	2	12/16/2020	12/15/2021
DC Block	Mini-Circuits	BLK-18-S+	1	12/16/2020	12/15/2021

12.3 測試配置



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12.4 量測方法

12.4.1 Reference Level of Emission Limit:

1. Set analyzer center frequency to DTS channel center frequency.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW = 100kHz & VBW = 300 kHz.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. MIMO mode: offset is set following “measure and add 10 Log (N)” on spectrum to measure for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna.

12.4.2 發射頻帶邊緣量測:

1. To connect Antenna Port of EUT to Spectrum.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
4. Set start to edge frequency, and stop frequency of spectrum analyzer so as to encompass the spectrum to be examined.
5. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Detector = Peak, Sweep = auto
6. Mark the highest reading of the emission as the reference level measurement.
7. Set DL as the limit = reading on marker of reference level measurement – 20dBm
8. Mark the highest readings of the emissions outside of 2400MHz~2483.5MHz.
9. Repeat above procedures until all default test channel (low, middle, and high) was complete.
10. MIMO mode: offset is set following “measure and add 10 Log (N)” on spectrum to measure for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna.

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12.4.3 發射頻帶外量測:

1. To connect Antenna Port of EUT to Spectrum
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
3. Set RBW = 100 kHz & VBW= 300 kHz, Detector =Peak, Sweep = Auto.
4. Allow trace to fully stabilize.
5. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
6. Repeat above procedures until all default test channel measured were complete.
7. MIMO mode: offset is set following “measure and add 10 Log (N)” on spectrum to measure for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna.

Note:

For test of MIMO mode, the highest emission of worst case employing Measure and add 10 log (N) technical is reported on this report after the comparison between Main Antenna at single transmitting mode and Aux that yields the higher value. The MIMO transmitting mode produces higher value of outcome.

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12.5 量測結果

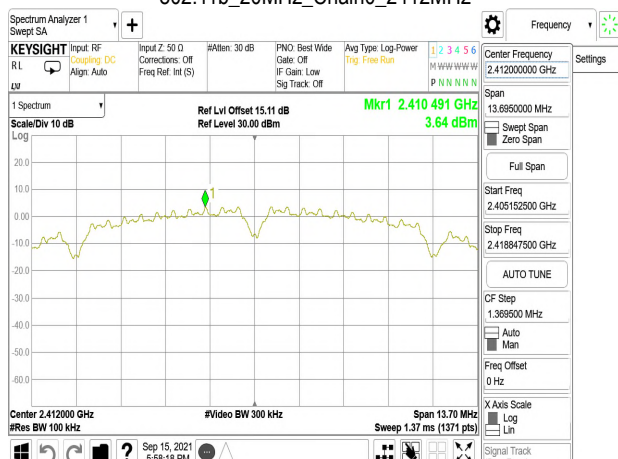
Reference Level of Limit 802.11b mode			
Freq. (MHz)	PSD (dBm)	Offset	Reference Level of Limit (dBm)
2412	3.64	15.11	-16.36
2437	3.92	15.11	-16.08
2462	4.30	15.11	-15.70
Reference Level of Limit 802.11g mode			
Freq. (MHz)	PSD (dBm)	Offset	Reference Level of Limit (dBm)
2412	3.16	15.11	-16.84
2437	3.59	15.11	-16.41
2462	4.30	15.11	-15.70
Reference Level of Limit 802.11n20 MODE			
Freq. (MHz)	PSD (dBm)	Offset	Reference Level of Limit (dBm)
2412	2.54	15.11	-17.46
2437	2.98	15.11	-17.02
2462	3.67	15.11	-16.33
Reference Level of Limit 802.11n40 MODE			
Freq. (MHz)	PSD (dBm)	Offset	Reference Level of Limit (dBm)
2422	-0.56	15.11	-20.56
2437	-0.18	15.11	-20.18
2452	-0.73	15.11	-20.73

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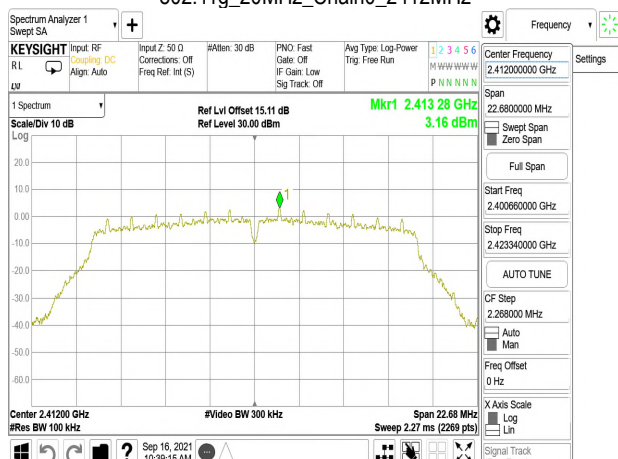
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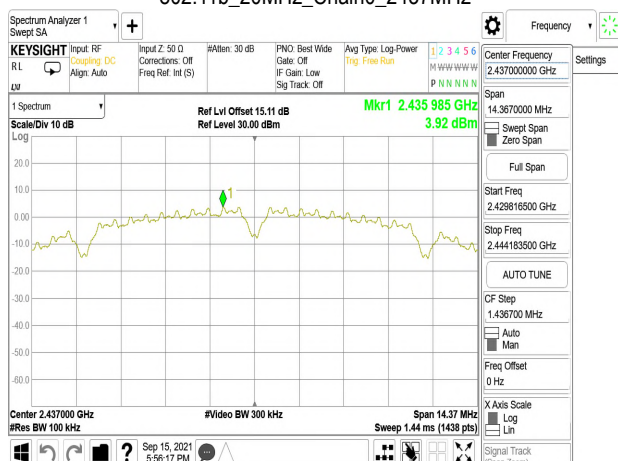
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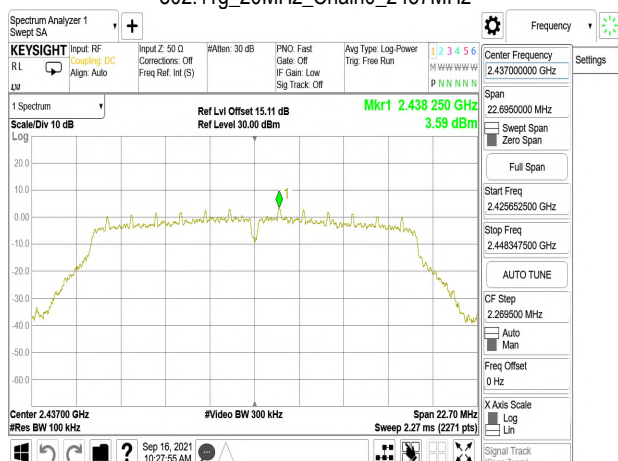
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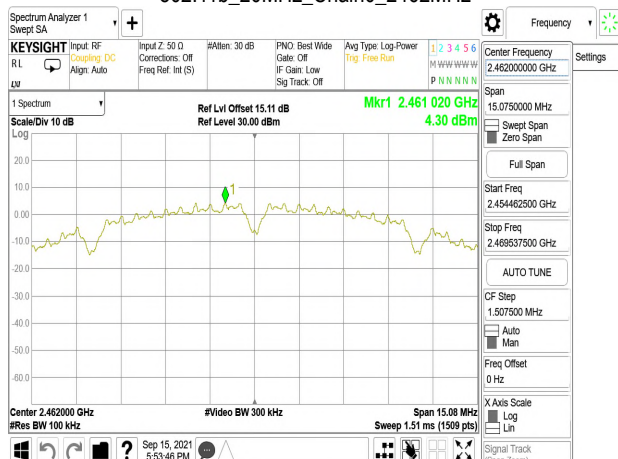
802.11b_20MHz_Chain0_2437MHz



802.11g_20MHz_Chain0_2437MHz



802.11b_20MHz_Chain0_2462MHz



802.11g_20MHz_Chain0_2462MHz

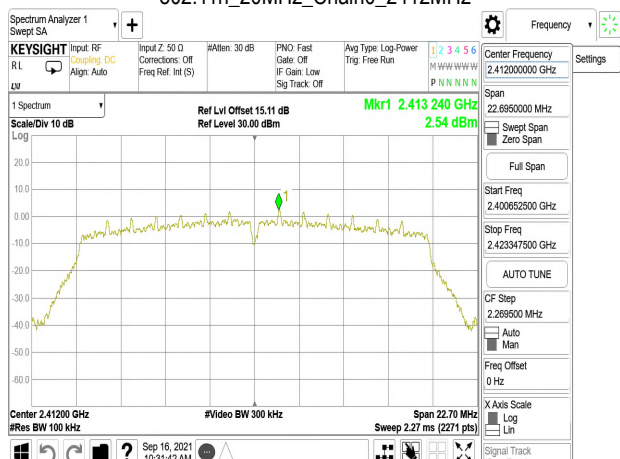


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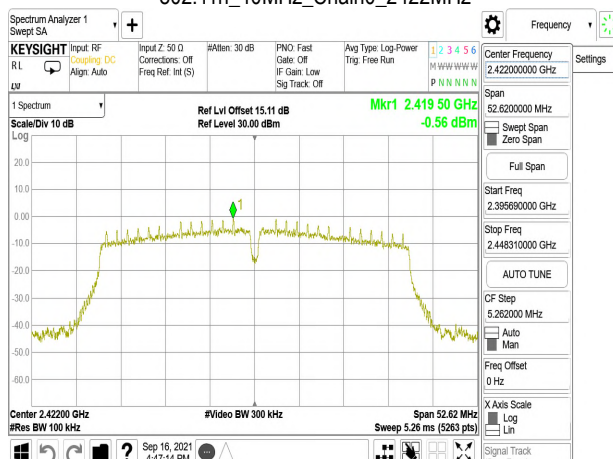
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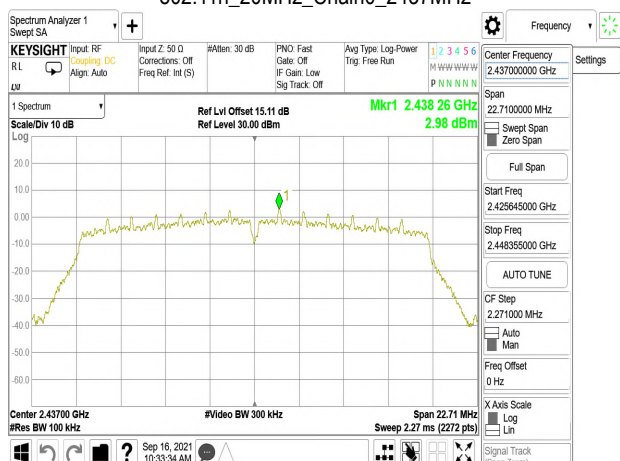
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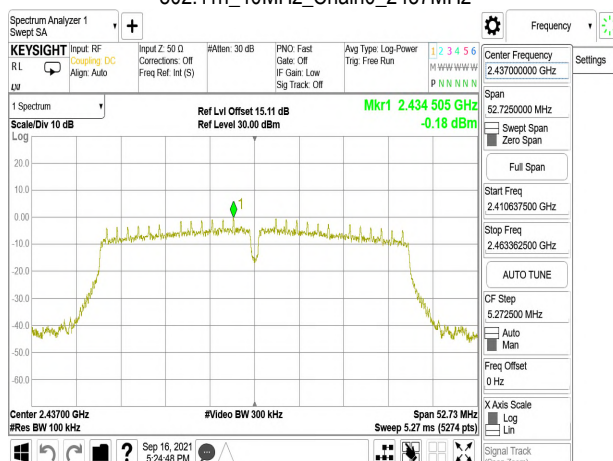
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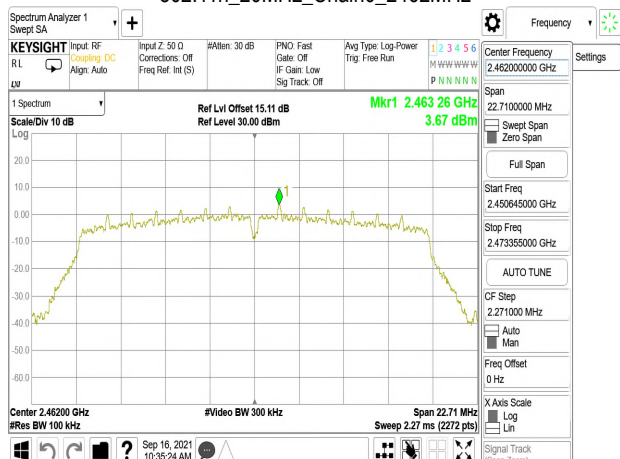
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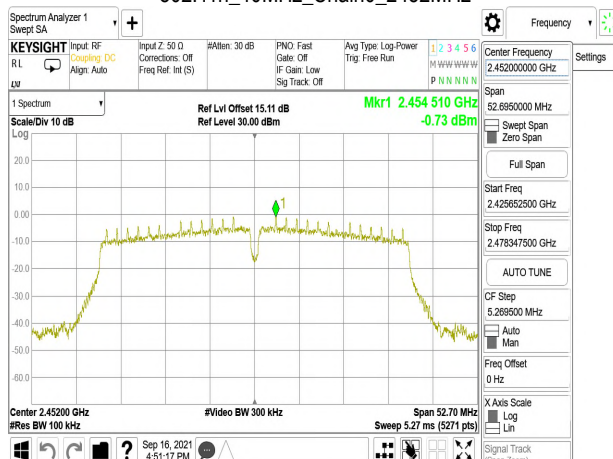
802.11n_40MHz_Chain0_2437MHz



802.11n_20MHz_Chain0_2462MHz



802.11n_40MHz_Chain0_2452MHz



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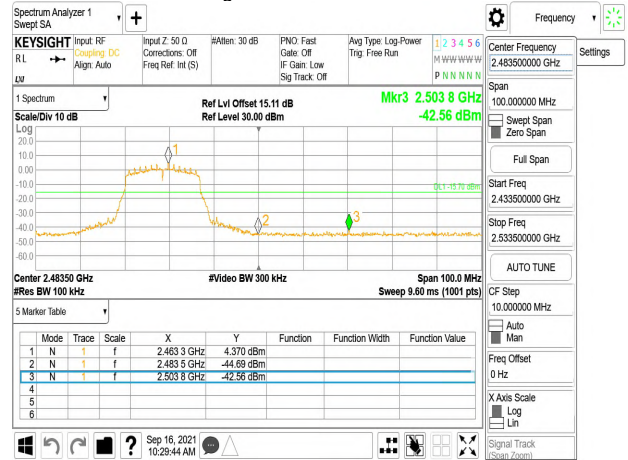
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802.11b_20MHz_Chain0_2412MHz



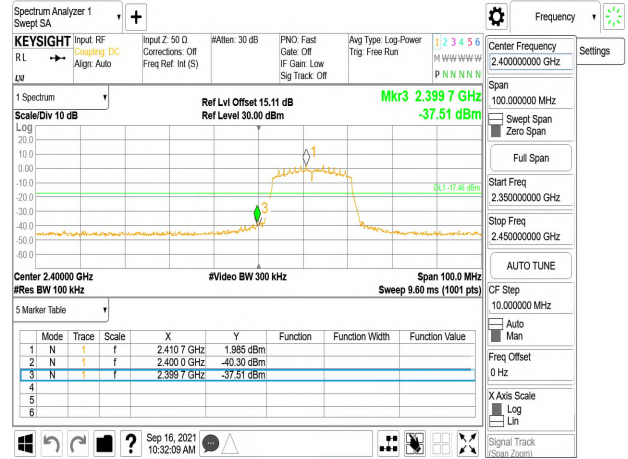
802.11g_20MHz_Chain0_2462MHz



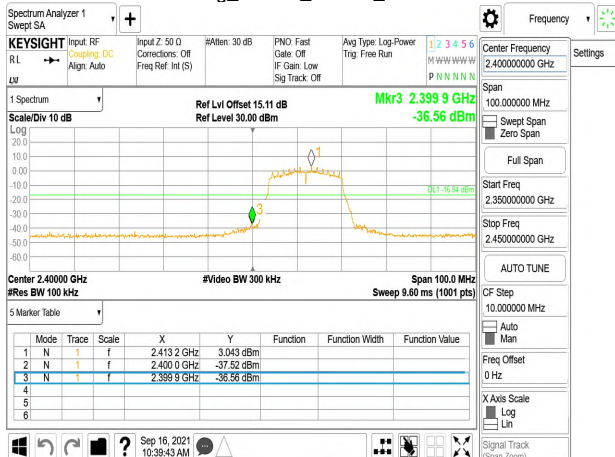
802.11b_20MHz_Chain0_2462MHz



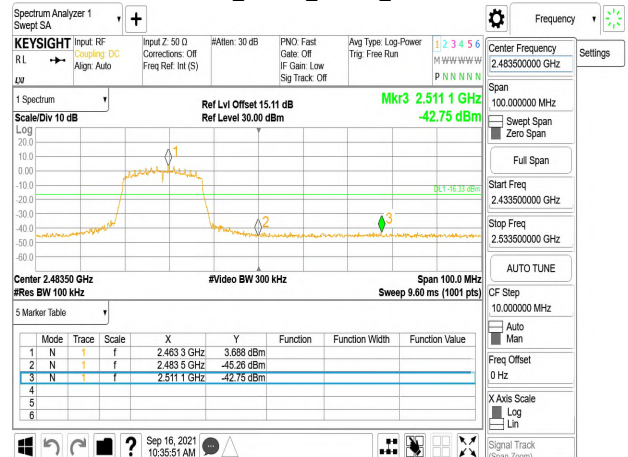
802.11n_20MHz_Chain0_2412MHz



802.11g_20MHz_Chain0_2412MHz



802.11n_20MHz_Chain0_2462MHz

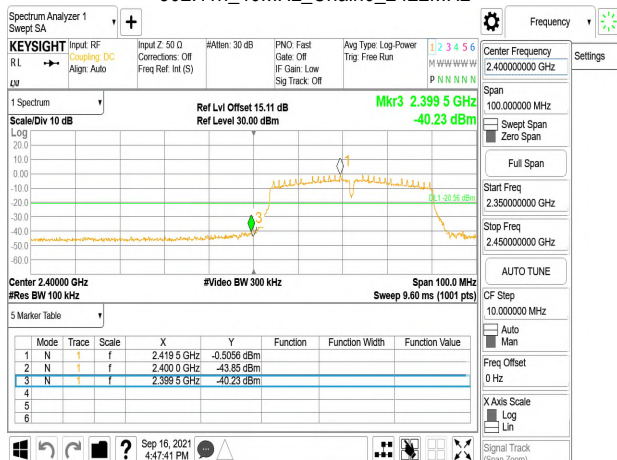


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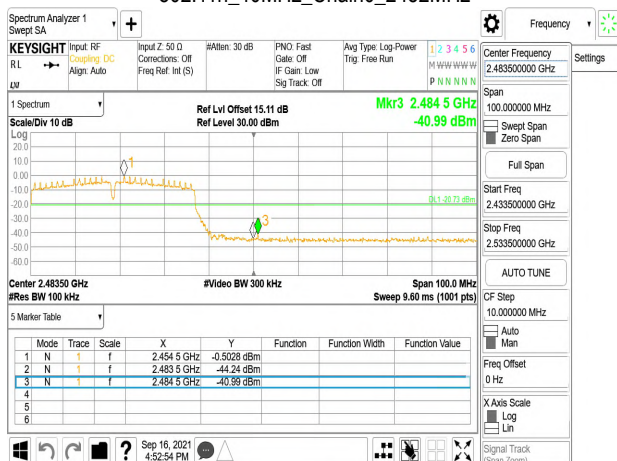
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802.11n_40MHz_Chain0_2422MHz



802.11n_40MHz_Chain0_2452MHz



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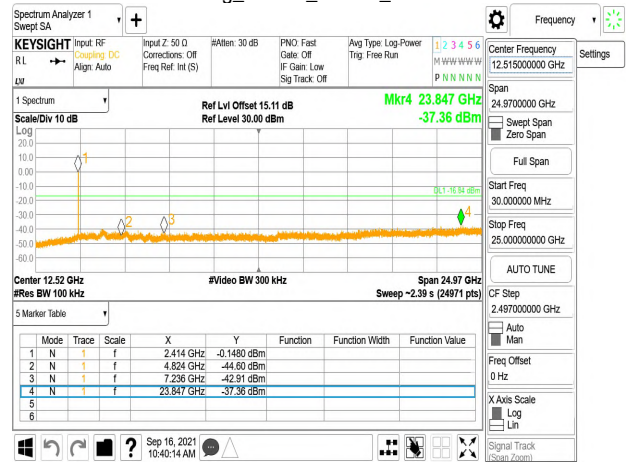
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802.11b_20MHz_Chain0_2412MHz



802.11g_20MHz_Chain0_2412MHz



802.11b_20MHz_Chain0_2437MHz



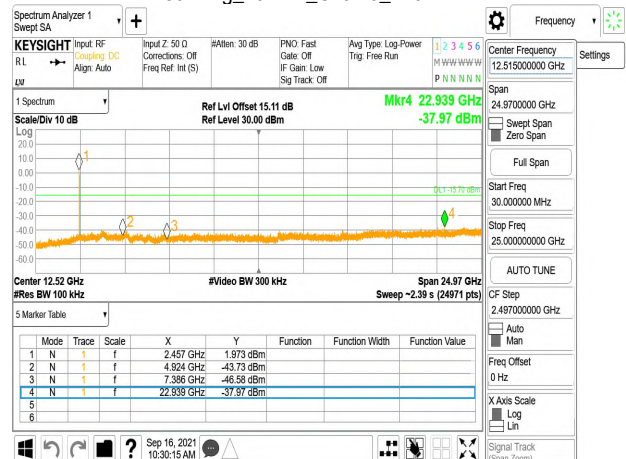
802.11g_20MHz_Chain0_2437MHz



802.11b_20MHz_Chain0_2462MHz



802.11g_20MHz_Chain0_2462MHz

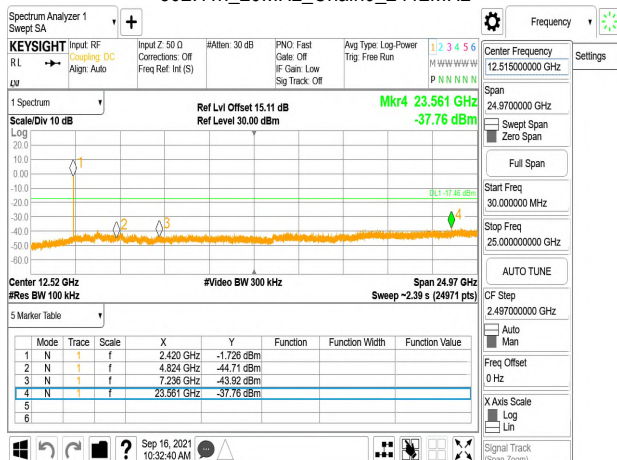


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802.11n_20MHz_Chain0_2412MHz



802.11n_40MHz_Chain0_2422MHz



802.11n_20MHz_Chain0_2437MHz



802.11n_40MHz_Chain0_2437MHz



802.11n_20MHz_Chain0_2462MHz



802.11n_40MHz_Chain0_2452MHz



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13 場強輻射量測

13.1 適用標準

依據NCC低功率射頻器材技術規範3.6之要求，低功率射頻器材其電場強度應小於或等於下表之限制值，且其不必要之發射皆不得大於主波發射強度，此外，落於3.5禁用頻段之輻射發射，應符合3.6之規定。

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

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13.2 量測儀器

Radiated Emission Test Site: SAC 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Horn Antenna	SCHWARZBECK	BBHA9170	184	12/11/2020	12/10/2021
Horn Antenna	SCHWARZBECK	BBHA9120D	1441	10/16/2020	10/15/2021
Bi-log Antenna	SCHWARZBECK	VULB9168	378	08/20/2021	08/19/2022
Loop Antenna	ETS.LINDGREN	6502	148045	10/19/2020	10/18/2021
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	04/27/2021	04/26/2022
EMI Test Receiver	R&S	ESCI 7	100759	08/26/2021	08/25/2022
Pre-Amplifier	HP	8449B	3008A00578	12/16/2020	12/15/2021
Pre-Amplifier	EMC Instruments	EMC184045B	980135	12/16/2020	12/15/2021
Pre-Amplifier	HP	8447D	2944A07676	12/16/2020	12/15/2021
Attenuator	Mini-Circuit	BW-S10W2+	4	12/16/2020	12/15/2021
Filter 2400-2483.5 MHz	EWT	EWT-14-0166	M1	12/16/2020	12/15/2021
High Pass Filter	WI	WHKX4.0/18G-10SS	22	12/16/2020	12/15/2021
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2636/2	12/16/2020	12/15/2021
Coaxial Cable	Huber Suhner	SUCOFLEX 104	340057/4	12/16/2020	12/15/2021
Coaxial Cable	Huber Suhner	SUCOFLEX 104PEA	800052/2	12/16/2020	12/15/2021
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2621/2	12/16/2020	12/15/2021
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2617/2	12/16/2020	12/15/2021
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2630/2	12/16/2020	12/15/2021
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY22962/2	12/16/2020	12/15/2021
Site Cal	SGS	SAC 3	N/A	01/01/2021	12/31/2021
Test Software	audix	e3	Ver. 9 210322	N.C.R	N.C.R

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13.3 量測方法

將待測物置於非金屬桌面，測試頻率1GHz以下時，使用桌高0.8 米，1GHz以上時，使用桌高1.5米，使其在工作狀態，接收天線置於 3 米外相同的高度。待測物分別要垂直或水平放置，而且桌面要 360 度旋轉，另外接收天線也要從 1.0 米至 4.0 米升降變化，以找出最大的輻射電場強度，接收天線置於水平、垂直極向各執行測試一次。

以下為頻譜儀的設定：

頻率	RBW	VBW	Detector
9kHz~150kHz	300Hz	300Hz	Quasi-Peak
150kHz~30MHz	10kHz	10kHz	Quasi-Peak
30MHz~1GHz	100kHz	300kHz	Peak
30MHz~1GHz	120kHz	360kHz	Quasi-Peak
1GHz以上 Maximum Emission Measurement	1MHz	3MHz	Peak
1GHz以上 Duty Cycle ≥ 98% Average Emission Measurement	1MHz	10Hz	Peak
1GHz以上 Duty Cycle < 98% Average Emission Measurement	1MHz	1/T	Peak

13.4 場強計算

- Distance extrapolation = $40 \cdot \log (\text{Required Distance(m)} / \text{Test Distance(m)})$
- Emission level (dBμV/m) = $20 \log \text{Emission level (μV/m)}$
- Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)
Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

註：

9 kHz ~ 30MHz 之輻射量測皆低於限制值 20dB 以上，依據LP0002 6.13規定混附發射毋需記錄。

輻射量測僅放最差模式（30MHz 以上）。

比較 H Plane、E1 Plane 和 E2 Plane 測試值後，附上最差模式數據。

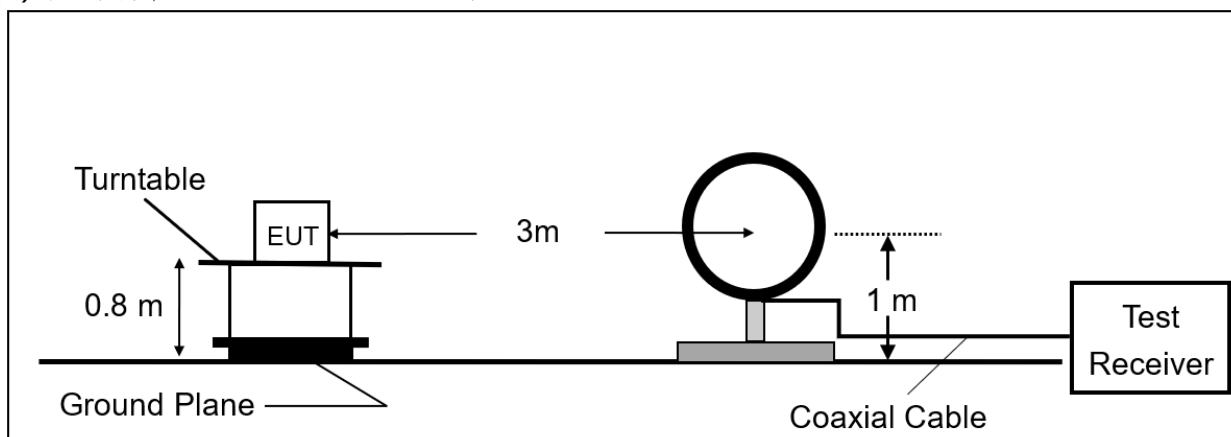
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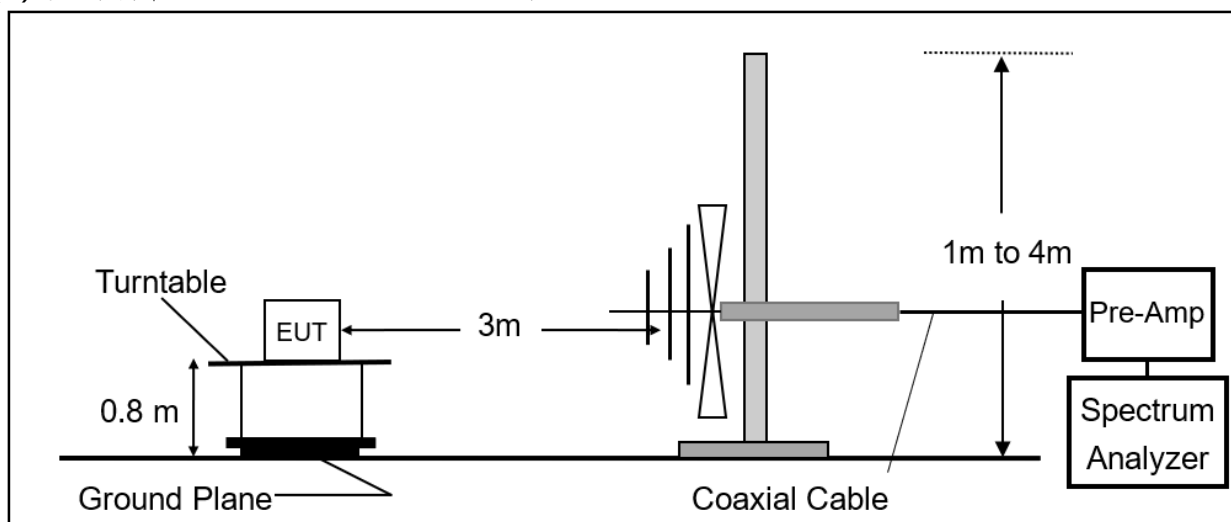
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13.5 測試配置

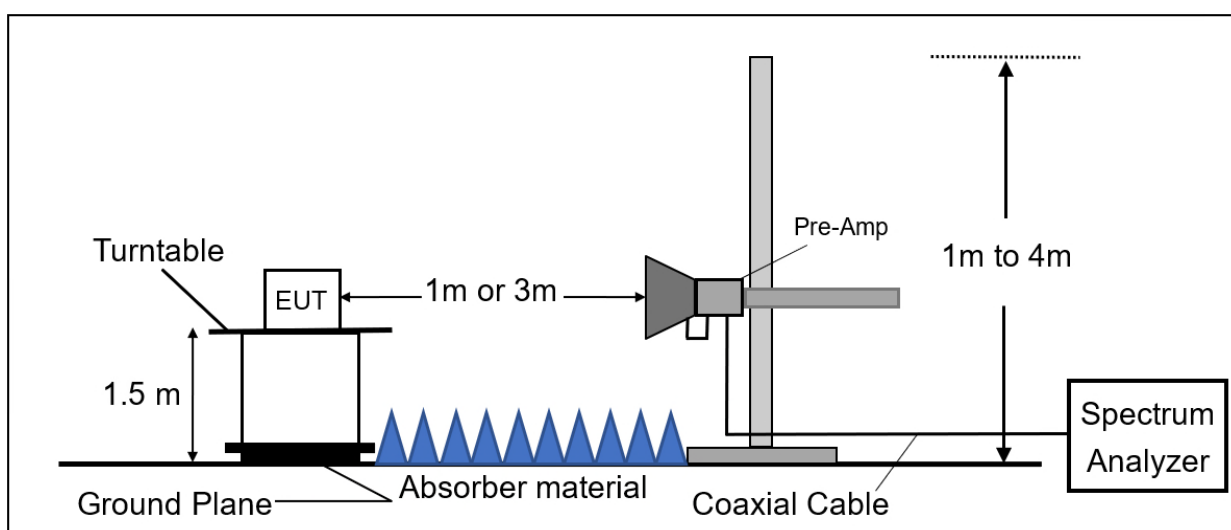
(A) 量測頻率低於 30MHz 以下之測試配置



(B) 量測頻率 30MHz 至 1000MHz 之測試配置



(C) 量測頻率 1000MHz 以上之測試配置



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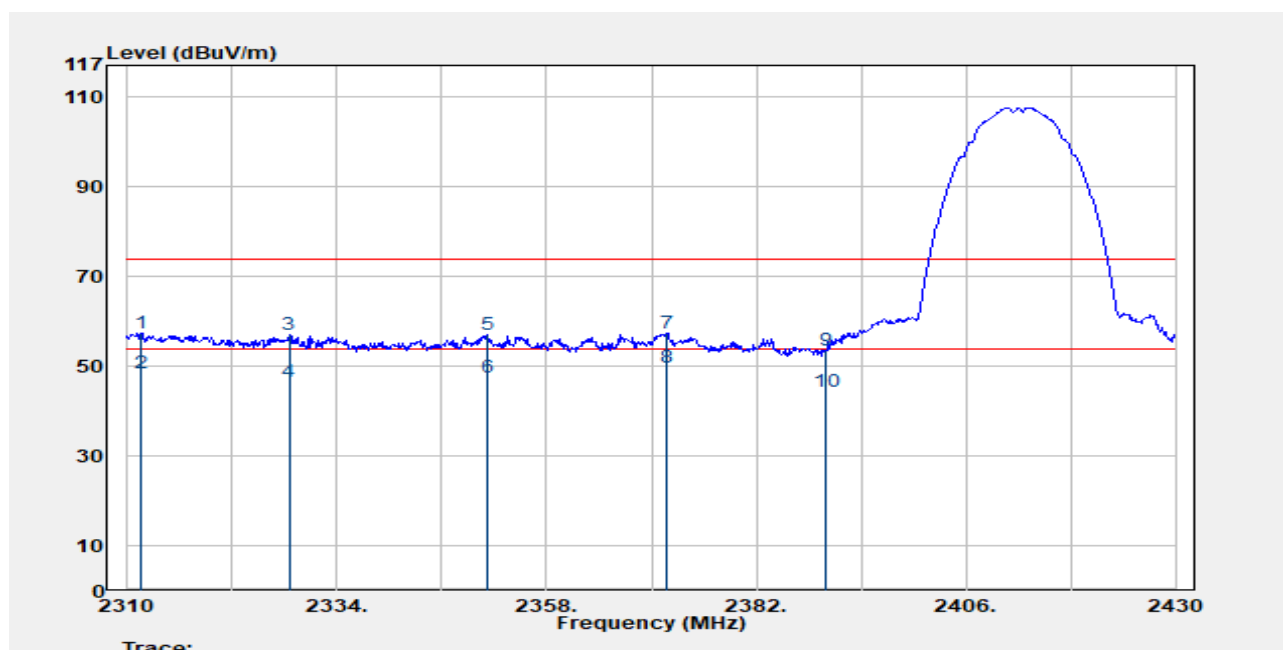
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13.6 量測結果

13.6.1 禁用頻帶輻射

Report Number	:ER-2021-80032	Test Site	:SAC 3
Operation Mode	:802.11b	Test Date	:2021-09-15
Test Frequency	:2412 MHz	Temp./Humi.	:25.9/65
Test Mode	:Bandedge CH Low	Antenna Pol.	:Vertical
EUT Pol	:E1 Plane	Engineer	:Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2311.440	Peak	56.19	1.16	57.35	74.00	-16.65
2311.440	Average	47.30	1.16	48.46	54.00	-5.54
2328.480	Peak	55.92	1.09	57.01	74.00	-16.99
2328.480	Average	45.56	1.09	46.65	54.00	-7.35
2351.280	Peak	56.04	1.00	57.04	74.00	-16.96
2351.280	Average	46.54	1.00	47.54	54.00	-6.46
2371.800	Peak	56.45	0.95	57.40	74.00	-16.60
2371.800	Average	48.93	0.95	49.88	54.00	-4.12
2390.000	Peak	52.81	0.92	53.73	74.00	-20.27
2390.000	Average	43.39	0.92	44.31	54.00	-9.69

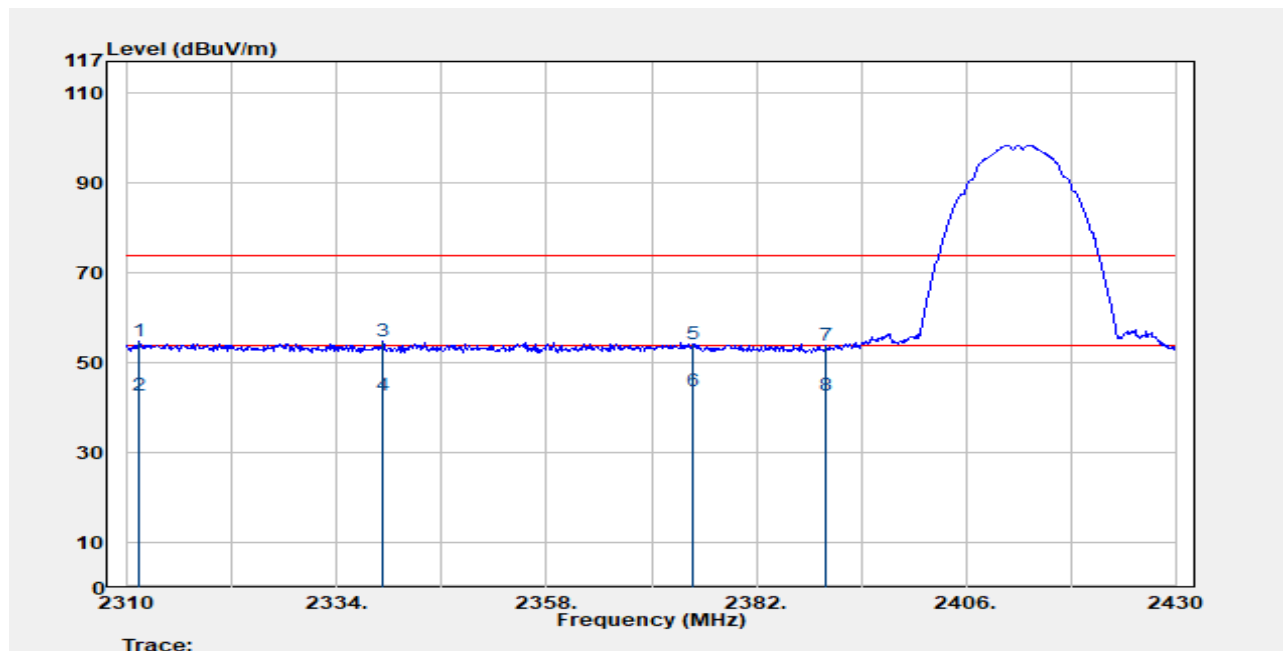
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Report Number :ER-2021-80032
Operation Mode :802.11b
Test Frequency :2412 MHz
Test Mode :Bandedge CH Low
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-15
Temp./Humi. :25.9/65
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2311.200	Peak	53.74	1.16	54.90	74.00	-19.10
2311.200	Average	41.76	1.16	42.92	54.00	-11.08
2339.280	Peak	53.70	1.05	54.74	74.00	-19.26
2339.280	Average	41.72	1.05	42.77	54.00	-11.23
2374.800	Peak	53.42	0.95	54.36	74.00	-19.64
2374.800	Average	42.78	0.95	43.73	54.00	-10.27
2390.000	Peak	52.93	0.92	53.85	74.00	-20.15
2390.000	Average	41.82	0.92	42.74	54.00	-11.26

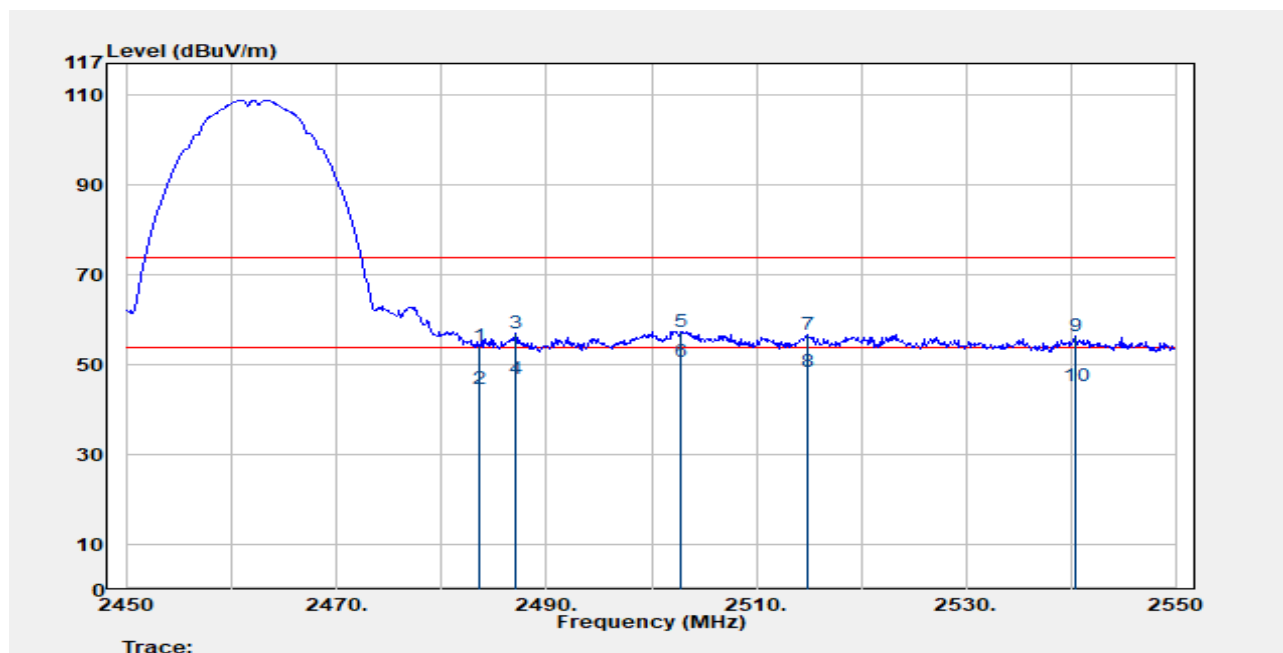
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Report Number :ER-2021-80032
Operation Mode :802.11b
Test Frequency :2462 MHz
Test Mode :Bandedge CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-15
Temp./Humi. :25.9/65
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2483.500	Peak	53.70	0.67	54.37	74.00	-19.63
2483.500	Average	43.94	0.67	44.61	54.00	-9.39
2487.000	Peak	56.52	0.66	57.18	74.00	-16.82
2487.000	Average	46.42	0.66	47.08	54.00	-6.92
2502.800	Peak	56.63	0.62	57.25	74.00	-16.75
2502.800	Average	50.22	0.62	50.84	54.00	-3.16
2514.900	Peak	56.17	0.67	56.84	74.00	-17.16
2514.900	Average	47.93	0.67	48.60	54.00	-5.40
2540.400	Peak	55.82	0.77	56.59	74.00	-17.41
2540.400	Average	44.59	0.77	45.36	54.00	-8.64

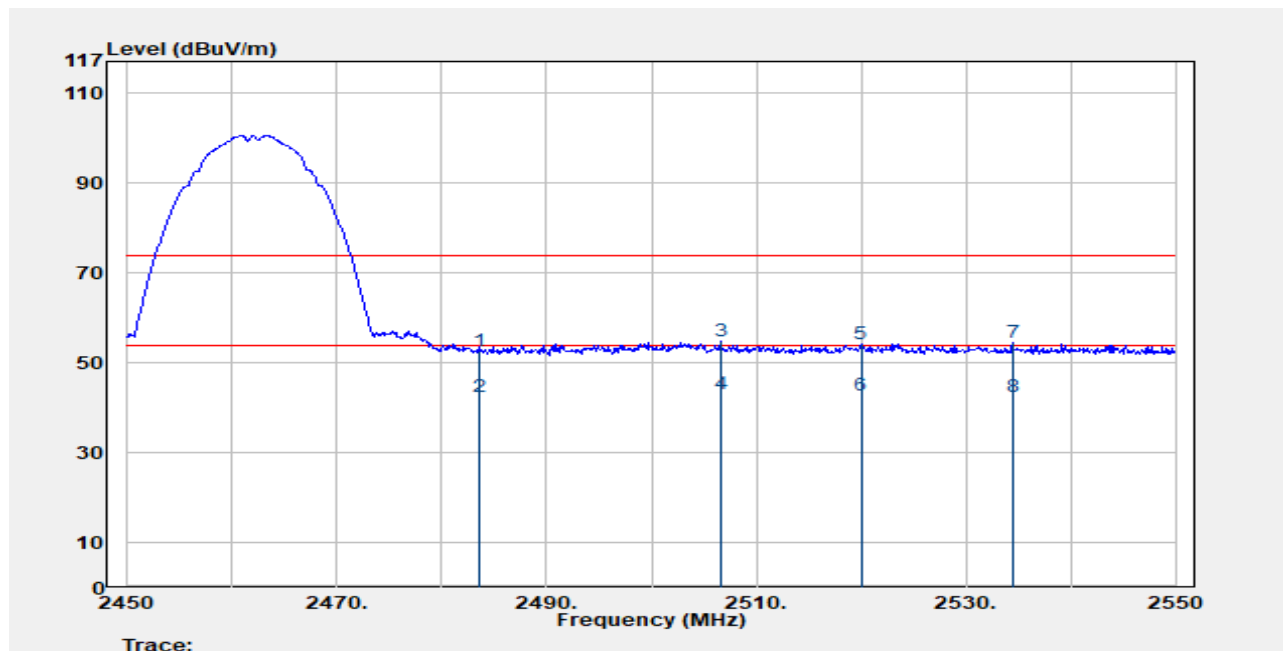
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Report Number :ER-2021-80032
Operation Mode :802.11b
Test Frequency :2462 MHz
Test Mode :Bandedge CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-15
Temp./Humi. :25.9/65
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2483.500	Peak	52.11	0.67	52.78	74.00	-21.22
2483.500	Average	41.79	0.67	42.46	54.00	-11.54
2506.600	Peak	54.07	0.63	54.70	74.00	-19.30
2506.600	Average	42.56	0.63	43.19	54.00	-10.81
2520.000	Peak	53.58	0.69	54.27	74.00	-19.73
2520.000	Average	42.16	0.69	42.85	54.00	-11.15
2534.500	Peak	53.66	0.75	54.41	74.00	-19.59
2534.500	Average	41.80	0.75	42.55	54.00	-11.45

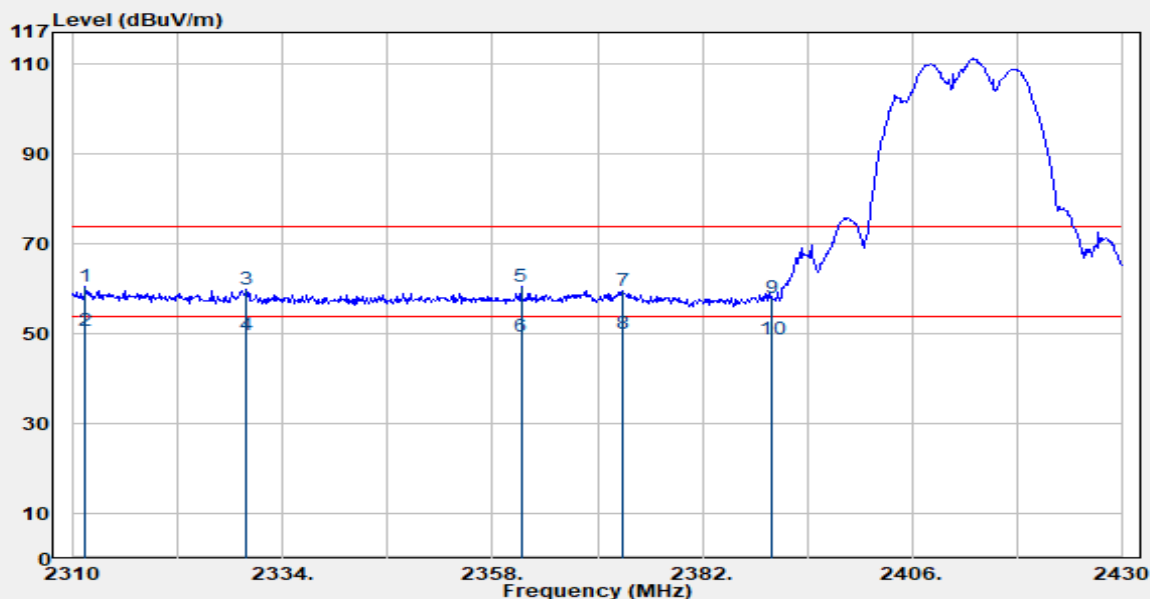
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Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2412 MHz
Test Mode :Bandedge CH Low
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-15
Temp./Humi. :25.9/65
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2311.320	Peak	59.37	1.16	60.53	74.00	-13.47
2311.320	Average	49.72	1.16	50.88	54.00	-3.12
2329.800	Peak	58.83	1.08	59.91	74.00	-14.09
2329.800	Average	48.65	1.08	49.73	54.00	-4.27
2361.240	Peak	59.56	0.98	60.54	74.00	-13.46
2361.240	Average	48.36	0.98	49.34	54.00	-4.66
2372.880	Peak	58.71	0.95	59.66	74.00	-14.34
2372.880	Average	49.12	0.95	50.07	54.00	-3.93
2390.000	Peak	57.16	0.92	58.08	74.00	-15.92
2390.000	Average	47.96	0.92	48.88	54.00	-5.12

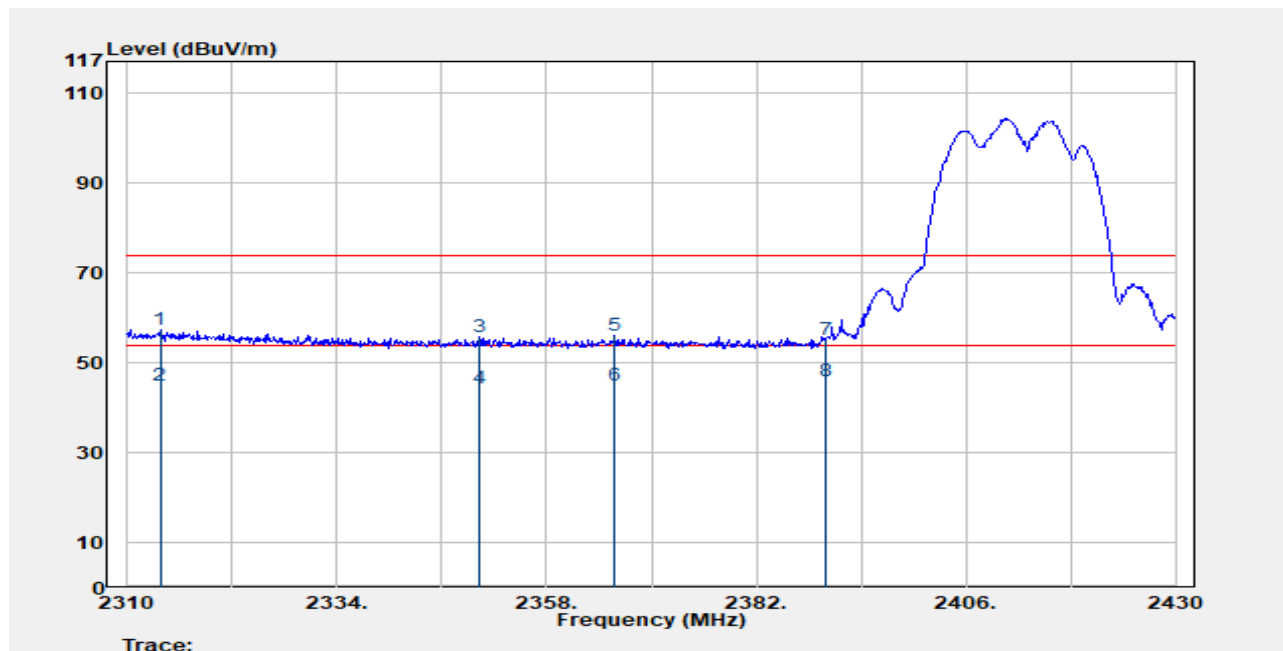
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Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2412 MHz
Test Mode :Bandedge CH Low
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-15
Temp./Humi. :25.9/65
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2313.720	Peak	56.27	1.15	57.42	74.00	-16.58
2313.720	Average	43.96	1.15	45.11	54.00	-8.89
2350.200	Peak	54.70	1.00	55.70	74.00	-18.30
2350.200	Average	43.53	1.00	44.53	54.00	-9.47
2365.800	Peak	55.12	0.97	56.09	74.00	-17.91
2365.800	Average	44.09	0.97	45.06	54.00	-8.94
2390.000	Peak	54.32	0.92	55.24	74.00	-18.76
2390.000	Average	44.98	0.92	45.90	54.00	-8.10

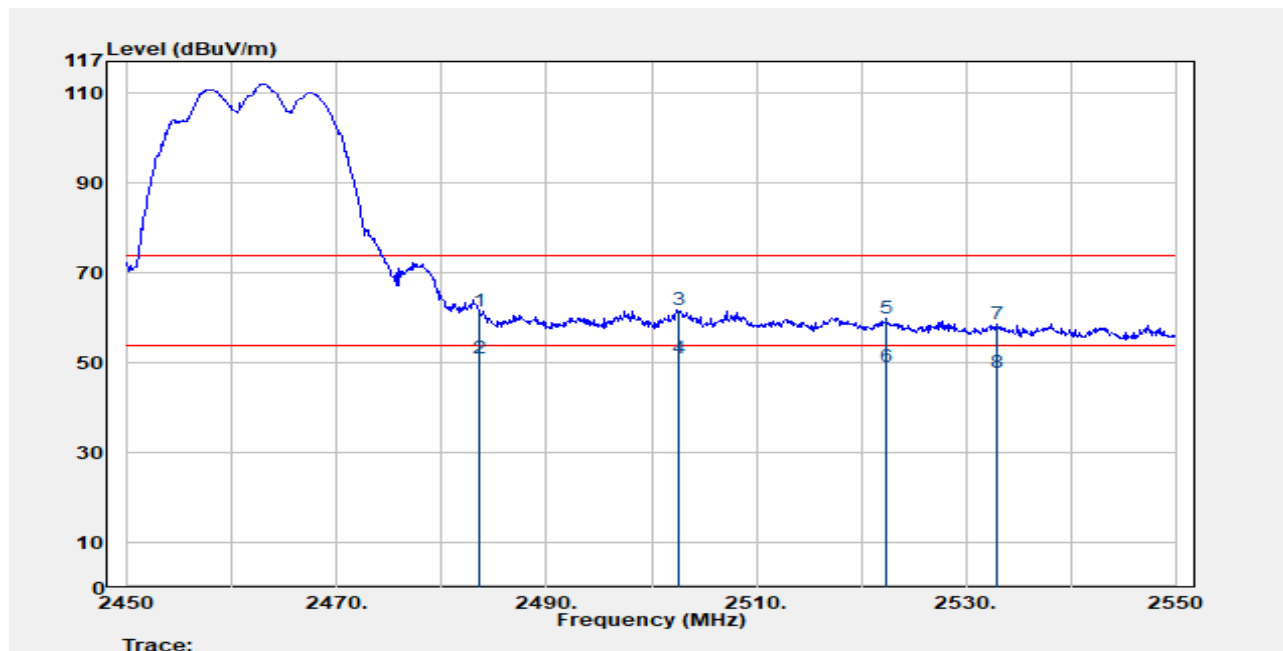
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Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2462 MHz
Test Mode :Bandedge CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-15
Temp./Humi. :25.9/65
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2483.500	Peak	60.79	0.67	61.46	74.00	-12.54
2483.500	Average	50.35	0.67	51.02	54.00	-2.98
2502.600	Peak	61.18	0.62	61.80	74.00	-12.20
2502.600	Average	50.33	0.62	50.95	54.00	-3.05
2522.400	Peak	59.29	0.70	59.99	74.00	-14.01
2522.400	Average	48.49	0.70	49.19	54.00	-4.81
2532.900	Peak	58.06	0.74	58.80	74.00	-15.20
2532.900	Average	47.27	0.74	48.01	54.00	-5.99

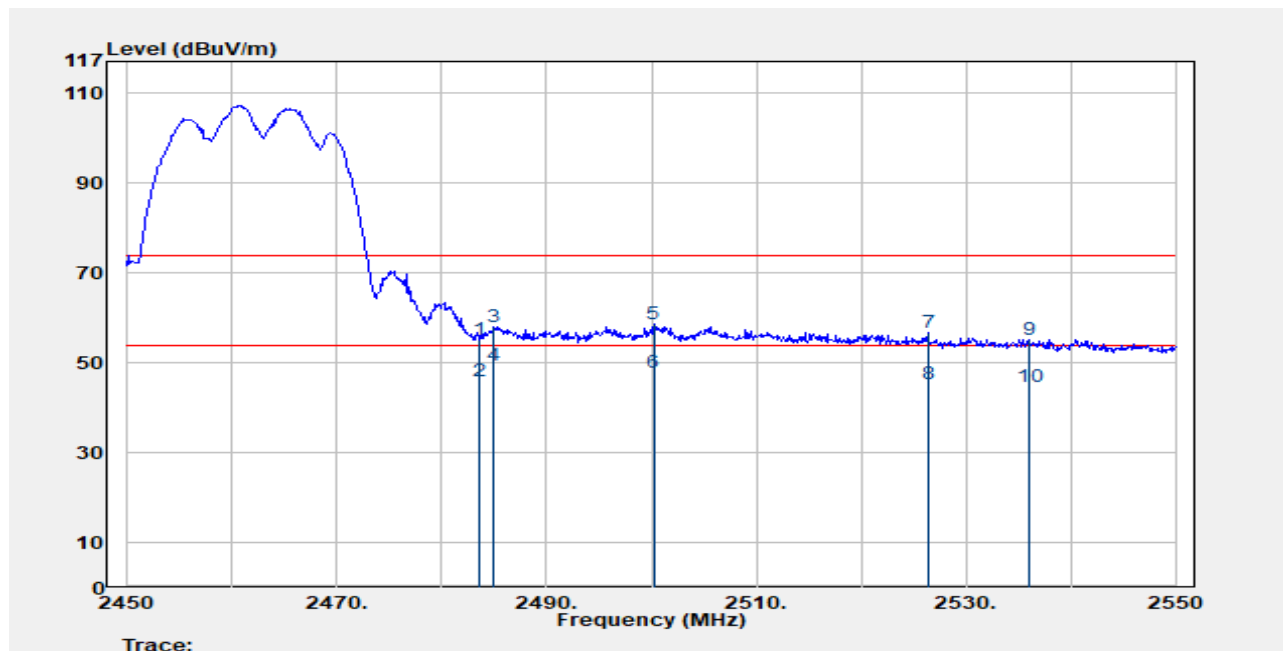
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Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2462 MHz
Test Mode :Bandedge CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-15
Temp./Humi. :25.9/65
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2483.500	Peak	54.56	0.67	55.23	74.00	-18.77
2483.500	Average	45.36	0.67	46.03	54.00	-7.97
2485.000	Peak	57.36	0.66	58.03	74.00	-15.97
2485.000	Average	48.86	0.66	49.52	54.00	-4.48
2500.200	Peak	57.91	0.61	58.51	74.00	-15.49
2500.200	Average	47.22	0.61	47.83	54.00	-6.17
2526.400	Peak	55.93	0.71	56.64	74.00	-17.36
2526.400	Average	44.48	0.71	45.19	54.00	-8.81
2536.000	Peak	54.54	0.75	55.29	74.00	-18.71
2536.000	Average	43.82	0.75	44.57	54.00	-9.43

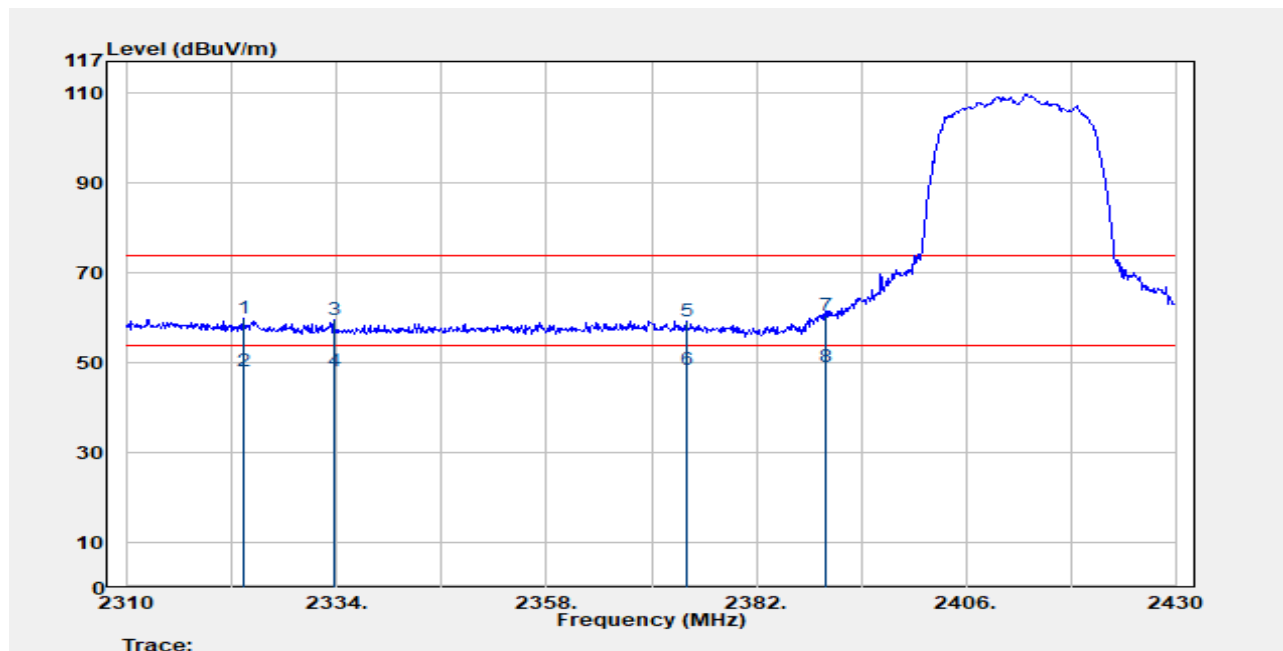
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Report Number :ER-2021-80032
Operation Mode :802.11n20
Test Frequency :2412 MHz
Test Mode :Bandedge CH Low
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-15
Temp./Humi. :25.9/65
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2323.200	Peak	58.82	1.11	59.94	74.00	-14.06
2323.200	Average	47.20	1.11	48.31	54.00	-5.69
2333.640	Peak	58.47	1.07	59.54	74.00	-14.46
2333.640	Average	47.14	1.07	48.21	54.00	-5.79
2373.960	Peak	58.36	0.95	59.31	74.00	-14.69
2373.960	Average	47.59	0.95	48.54	54.00	-5.46
2390.000	Peak	59.58	0.92	60.49	74.00	-13.51
2390.000	Average	48.38	0.92	49.30	54.00	-4.70

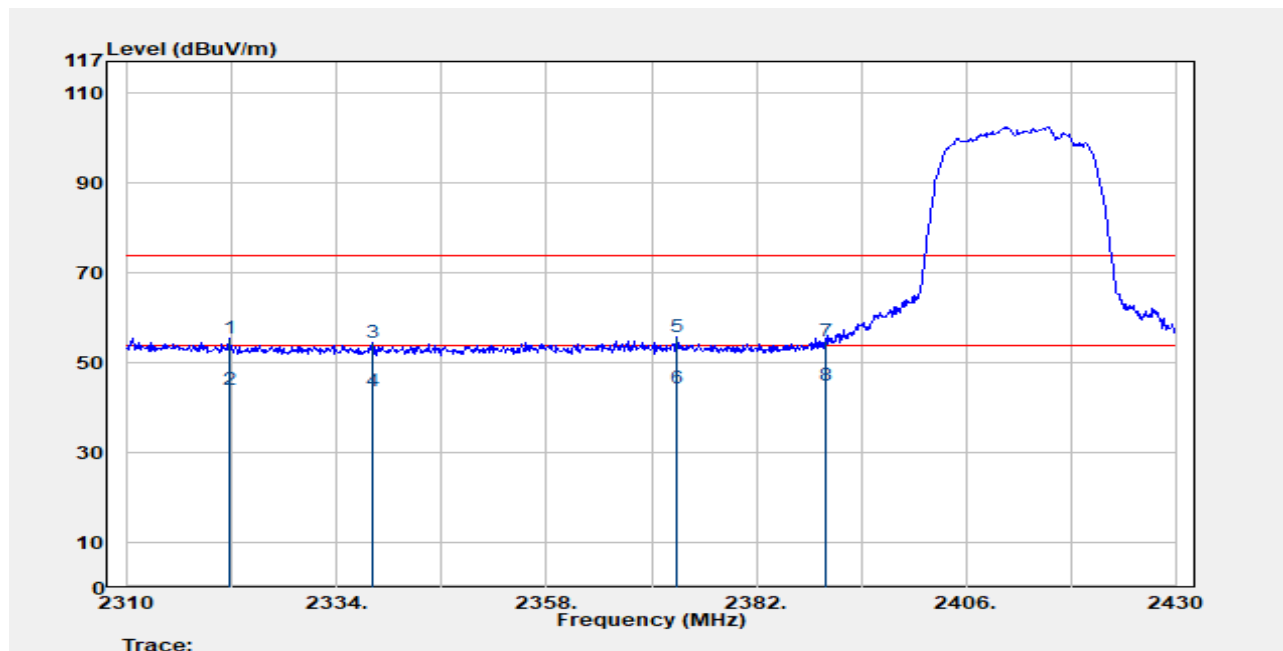
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Report Number :ER-2021-80032
Operation Mode :802.11n20
Test Frequency :2412 MHz
Test Mode :Bandedge CH Low
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-15
Temp./Humi. :25.9/65
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2321.640	Peak	54.37	1.12	55.48	74.00	-18.52
2321.640	Average	43.05	1.12	44.17	54.00	-9.83
2337.960	Peak	53.52	1.05	54.57	74.00	-19.43
2337.960	Average	42.80	1.05	43.85	54.00	-10.15
2372.880	Peak	55.00	0.95	55.96	74.00	-18.04
2372.880	Average	43.39	0.95	44.34	54.00	-9.66
2390.000	Peak	53.81	0.92	54.73	74.00	-19.27
2390.000	Average	44.20	0.92	45.12	54.00	-8.88

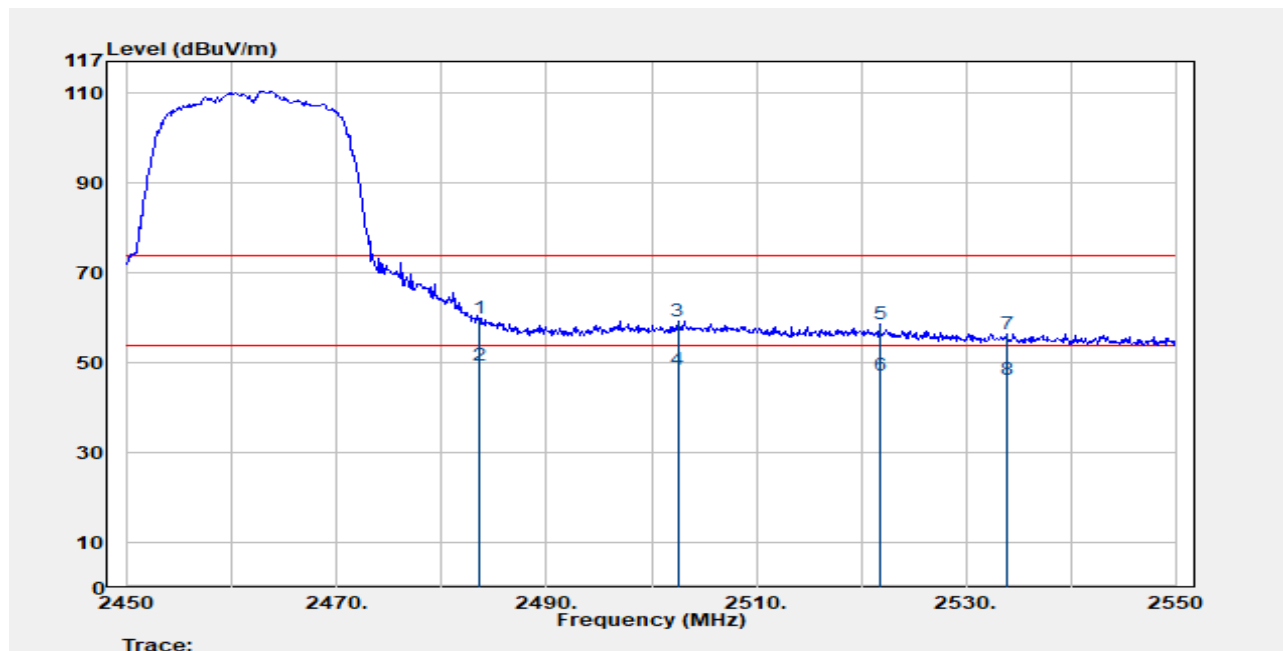
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Report Number :ER-2021-80032
Operation Mode :802.11n20
Test Frequency :2462 MHz
Test Mode :Bandedge CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-15
Temp./Humi. :25.9/65
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2483.500	Peak	59.10	0.67	59.77	74.00	-14.23
2483.500	Average	48.69	0.67	49.36	54.00	-4.64
2502.500	Peak	58.77	0.62	59.39	74.00	-14.61
2502.500	Average	47.79	0.62	48.41	54.00	-5.59
2521.800	Peak	57.91	0.70	58.60	74.00	-15.40
2521.800	Average	46.55	0.70	47.25	54.00	-6.75
2533.900	Peak	55.72	0.74	56.47	74.00	-17.53
2533.900	Average	45.45	0.74	46.19	54.00	-7.81

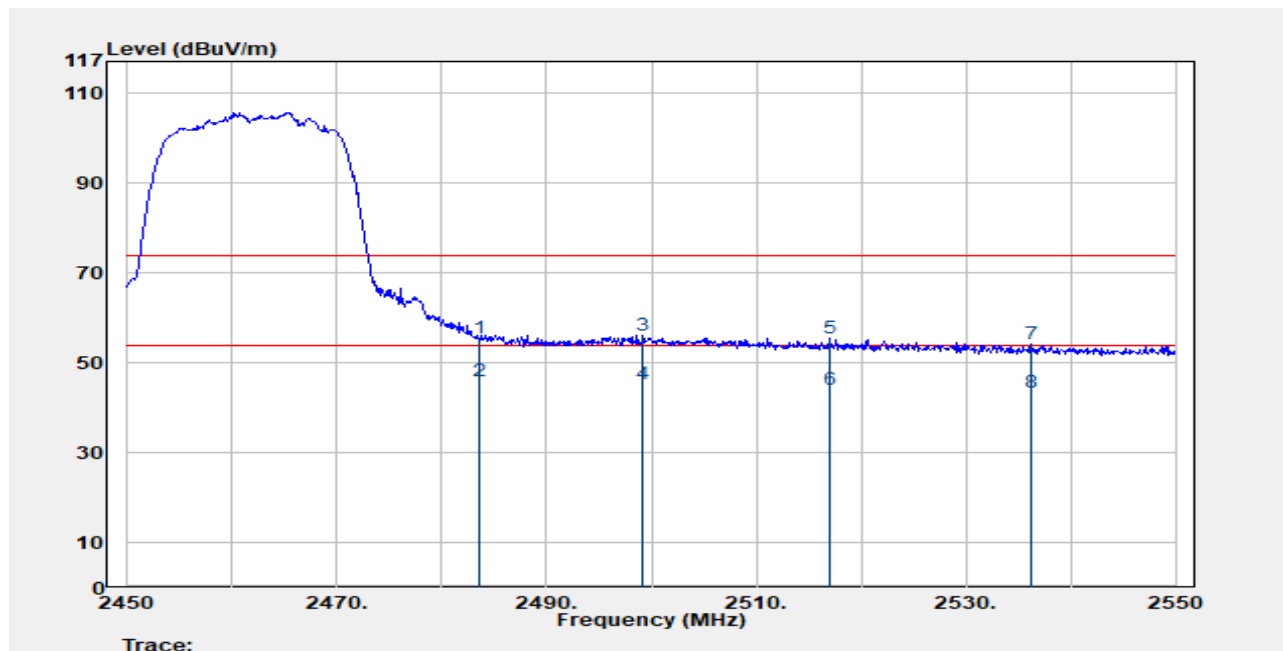
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Report Number :ER-2021-80032
Operation Mode :802.11n20
Test Frequency :2462 MHz
Test Mode :Bandedge CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-15
Temp./Humi. :25.9/65
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2483.500	Peak	54.92	0.67	55.59	74.00	-18.41
2483.500	Average	45.18	0.67	45.85	54.00	-8.15
2499.200	Peak	55.63	0.61	56.24	74.00	-17.76
2499.200	Average	44.76	0.61	45.37	54.00	-8.63
2517.000	Peak	54.68	0.68	55.36	74.00	-18.64
2517.000	Average	43.46	0.68	44.14	54.00	-9.86
2536.200	Peak	53.49	0.75	54.25	74.00	-19.75
2536.200	Average	42.70	0.75	43.45	54.00	-10.55

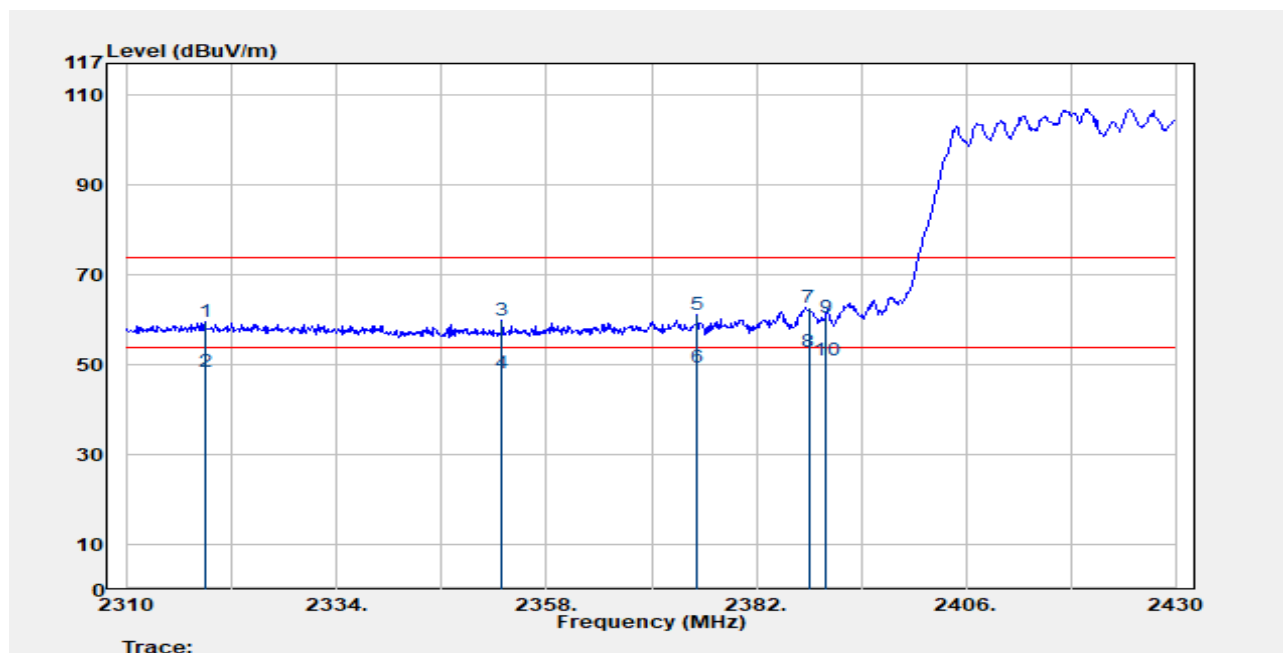
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Report Number :ER-2021-80032
Operation Mode :802.11n40
Test Frequency :2422 MHz
Test Mode :Bandedge CH Low
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-15
Temp./Humi. :25.9/65
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2318.880	Peak	58.37	1.13	59.50	74.00	-14.50
2318.880	Average	47.42	1.13	48.55	54.00	-5.45
2352.840	Peak	58.82	1.00	59.81	74.00	-14.19
2352.840	Average	47.08	1.00	48.08	54.00	-5.92
2375.280	Peak	60.18	0.95	61.13	74.00	-12.87
2375.280	Average	48.62	0.95	49.57	54.00	-4.43
2388.000	Peak	61.83	0.92	62.75	74.00	-11.25
2388.000	Average	52.07	0.92	52.99	54.00	-1.01
2390.000	Peak	59.51	0.92	60.43	74.00	-13.57
2390.000	Average	50.12	0.92	51.04	54.00	-2.96

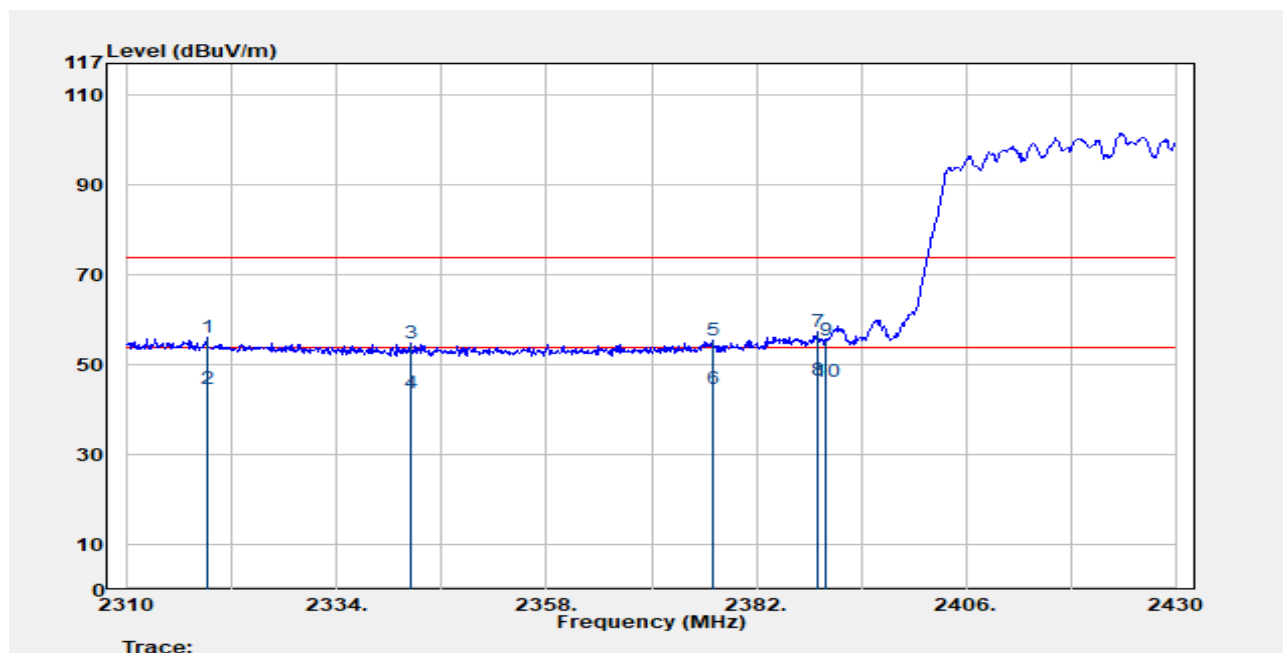
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Report Number :ER-2021-80032
Operation Mode :802.11n40
Test Frequency :2422 MHz
Test Mode :Bandedge CH Low
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-15
Temp./Humi. :25.9/65
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2319.120	Peak	54.85	1.13	55.98	74.00	-18.02
2319.120	Average	43.58	1.13	44.71	54.00	-9.29
2342.400	Peak	53.80	1.03	54.83	74.00	-19.17
2342.400	Average	42.83	1.03	43.86	54.00	-10.14
2376.960	Peak	54.69	0.94	55.63	74.00	-18.37
2376.960	Average	43.62	0.94	44.56	54.00	-9.44
2388.960	Peak	56.51	0.92	57.43	74.00	-16.57
2388.960	Average	45.68	0.92	46.60	54.00	-7.40
2390.000	Peak	54.50	0.92	55.41	74.00	-18.59
2390.000	Average	45.25	0.92	46.17	54.00	-7.83

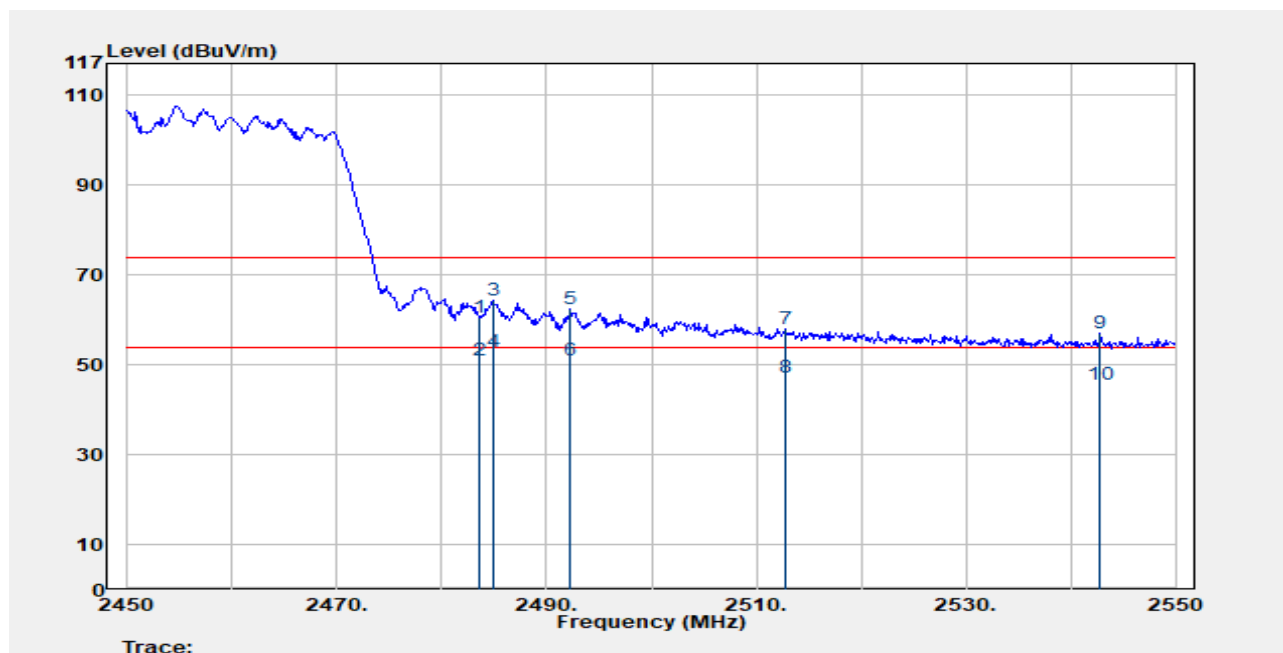
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Report Number :ER-2021-80032
Operation Mode :802.11n40
Test Frequency :2452 MHz
Test Mode :Bandedge CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-15
Temp./Humi. :25.9/65
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2483.500	Peak	59.88	0.67	60.55	74.00	-13.45
2483.500	Average	50.52	0.67	51.19	54.00	-2.81
2484.900	Peak	63.86	0.66	64.52	74.00	-9.48
2484.900	Average	52.20	0.66	52.86	54.00	-1.14
2492.300	Peak	61.73	0.64	62.37	74.00	-11.63
2492.300	Average	50.42	0.64	51.06	54.00	-2.94
2512.800	Peak	57.47	0.66	58.13	74.00	-15.87
2512.800	Average	46.62	0.66	47.28	54.00	-6.72
2542.800	Peak	56.24	0.78	57.02	74.00	-16.98
2542.800	Average	44.79	0.78	45.57	54.00	-8.43

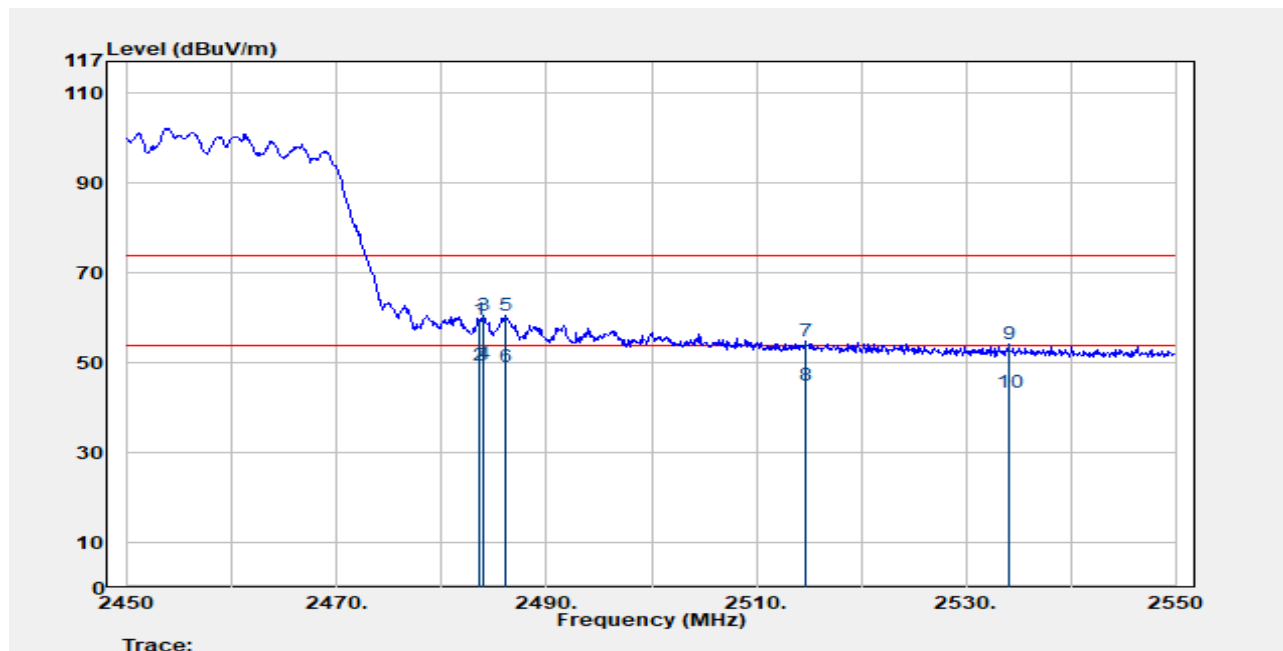
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Report Number :ER-2021-80032
Operation Mode :802.11n40
Test Frequency :2452 MHz
Test Mode :Bandedge CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-15
Temp./Humi. :25.9/65
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2483.500	Peak	58.85	0.67	59.52	74.00	-14.48
2483.500	Average	48.88	0.67	49.55	54.00	-4.45
2483.900	Peak	59.88	0.67	60.55	74.00	-13.45
2483.900	Average	49.26	0.67	49.93	54.00	-4.07
2486.100	Peak	59.83	0.66	60.49	74.00	-13.51
2486.100	Average	48.49	0.66	49.15	54.00	-4.85
2514.700	Peak	54.24	0.67	54.90	74.00	-19.10
2514.700	Average	44.20	0.67	44.87	54.00	-9.13
2534.100	Peak	53.41	0.75	54.15	74.00	-19.85
2534.100	Average	42.80	0.75	43.55	54.00	-10.45

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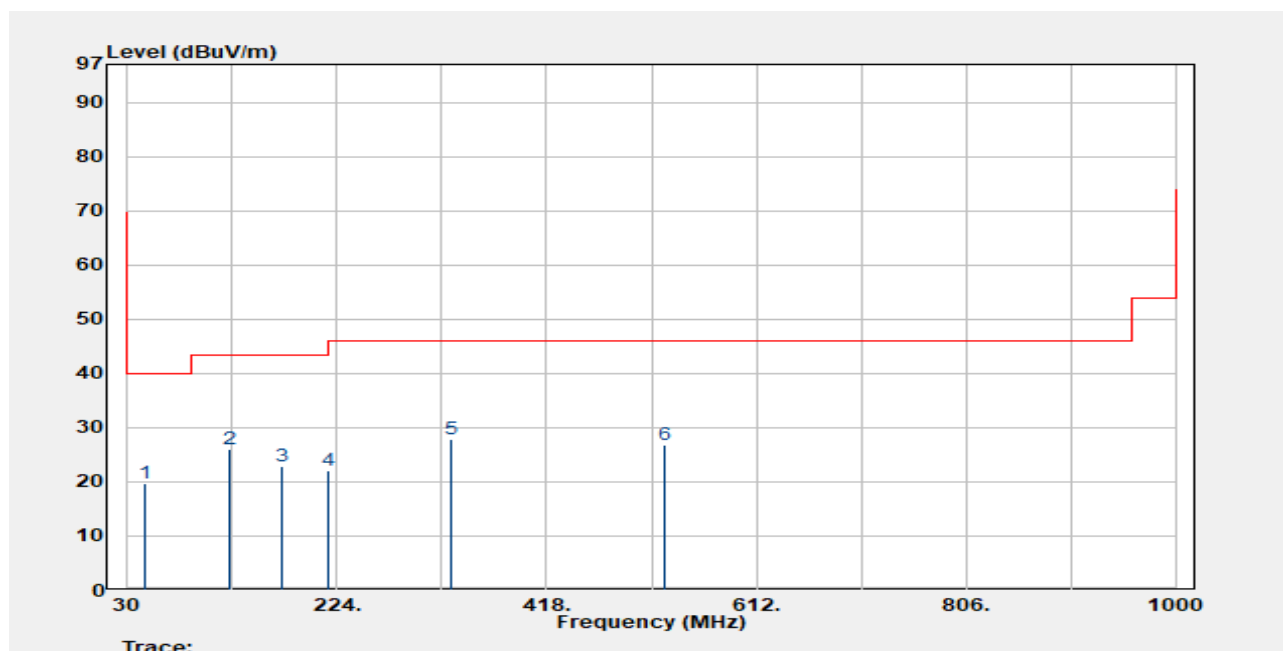
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13.6.2 發射機場強輻射

Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2437 MHz
Test Mode :Tx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
45.520	Peak	28.00	-8.18	19.83	40.00	-20.17
125.060	Peak	35.29	-9.19	26.10	43.50	-17.40
173.560	Peak	30.97	-8.11	22.86	43.50	-20.64
216.240	Peak	31.26	-9.29	21.97	46.00	-24.03
329.730	Peak	33.08	-5.17	27.91	46.00	-18.09
526.640	Peak	29.42	-2.74	26.68	46.00	-19.32

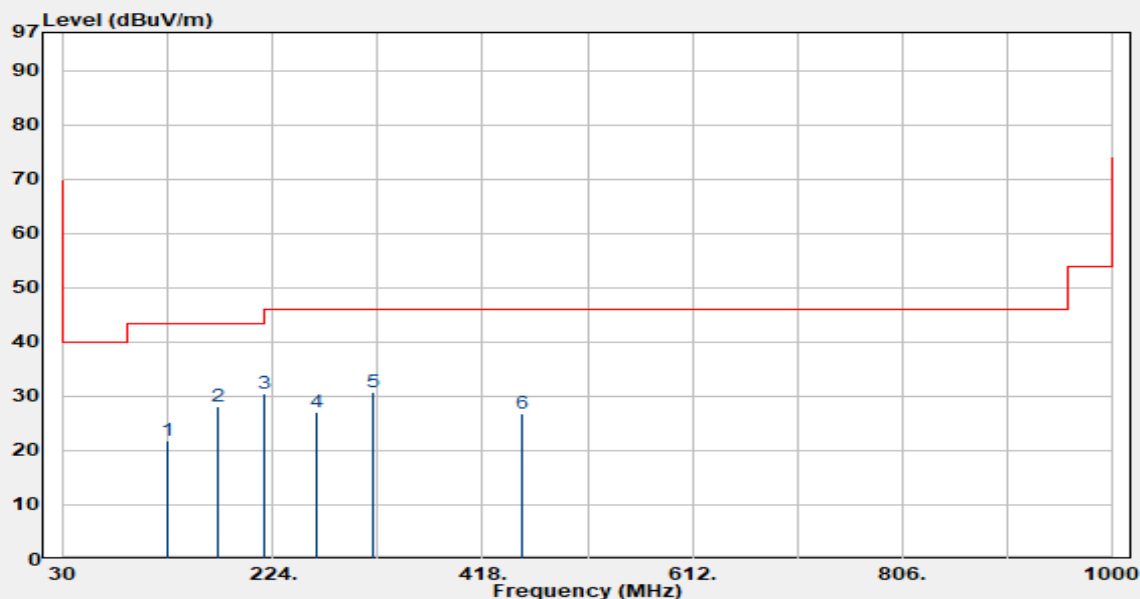
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Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2437 MHz
Test Mode :Tx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
126.030	Peak	30.96	-9.08	21.89	43.50	-21.61
173.560	Peak	36.25	-8.11	28.14	43.50	-15.36
216.240	Peak	39.83	-9.29	30.54	46.00	-15.46
263.770	Peak	34.40	-7.35	27.05	46.00	-18.95
316.150	Peak	36.47	-5.82	30.65	46.00	-15.35
453.890	Peak	29.31	-2.42	26.89	46.00	-19.11

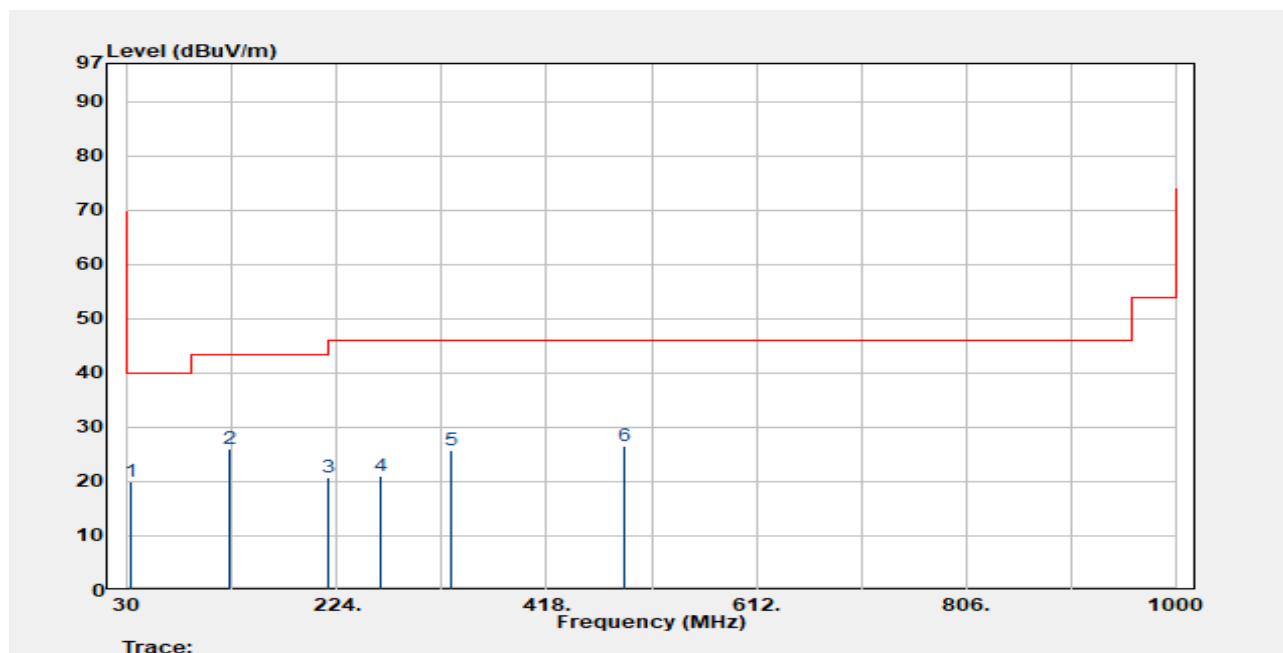
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Report Number :ER-2021-80032
Operation Mode :802.11n40
Test Frequency :2437 MHz
Test Mode :Tx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
32.910	Peak	28.68	-8.71	19.97	40.00	-20.03
125.060	Peak	35.21	-9.19	26.02	43.50	-17.48
216.240	Peak	30.06	-9.29	20.77	46.00	-25.23
263.770	Peak	28.49	-7.35	21.14	46.00	-24.86
328.760	Peak	31.02	-5.24	25.78	46.00	-20.22
490.750	Peak	29.14	-2.59	26.55	46.00	-19.45

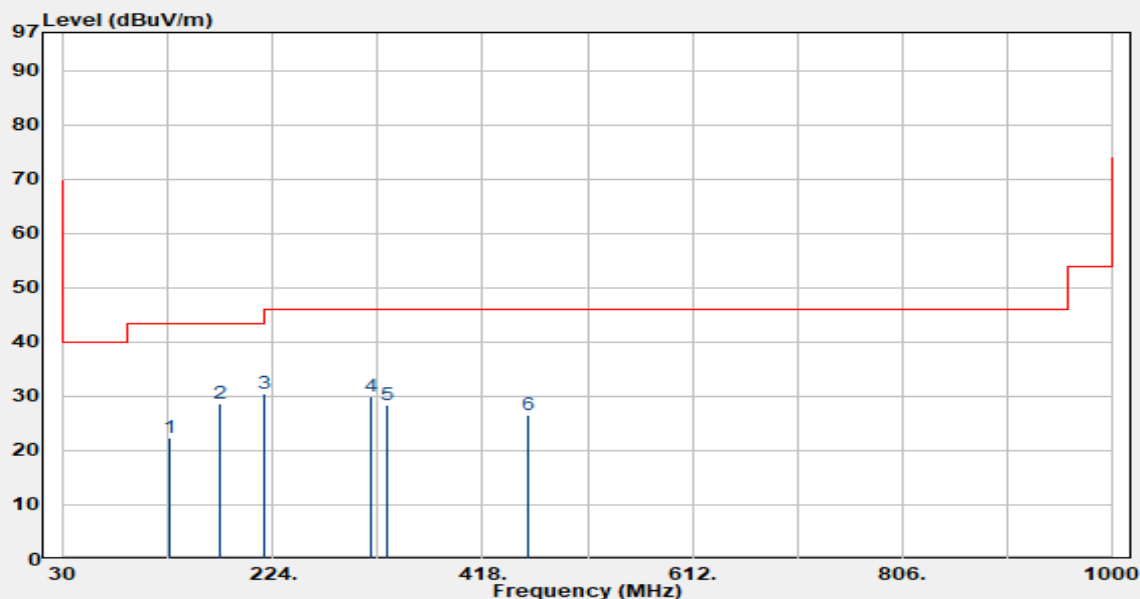
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Report Number :ER-2021-80032
Operation Mode :802.11n40
Test Frequency :2437 MHz
Test Mode :Tx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
127.970	Peak	31.10	-8.86	22.24	43.50	-21.26
175.500	Peak	36.86	-8.32	28.54	43.50	-14.96
216.240	Peak	39.90	-9.29	30.61	46.00	-15.39
315.180	Peak	35.87	-5.84	30.03	46.00	-15.97
328.760	Peak	33.67	-5.24	28.43	46.00	-17.57
459.710	Peak	29.02	-2.39	26.62	46.00	-19.38

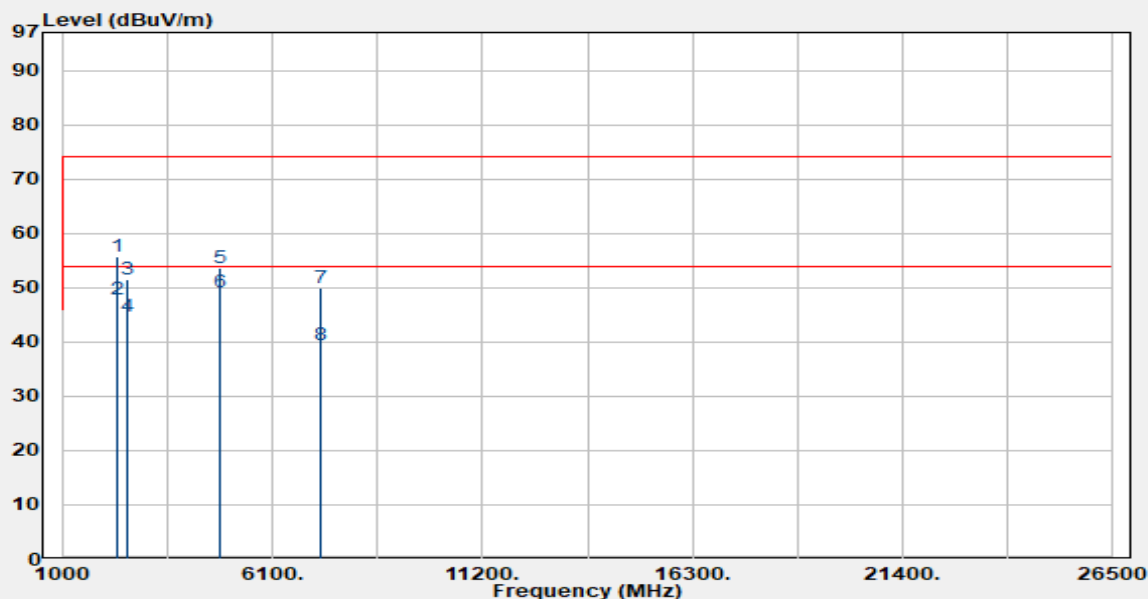
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Report Number :ER-2021-80032
Operation Mode :802.11b
Test Frequency :2412 MHz
Test Mode :Tx CH Low
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2299.000	Peak	54.42	1.21	55.63	74.00	-18.37
2299.000	Average	46.74	1.21	47.95	54.00	-6.05
2536.900	Peak	50.67	0.76	51.43	74.00	-22.57
2536.900	Average	43.92	0.76	44.68	54.00	-9.32
4824.000	Peak	46.50	7.13	53.63	74.00	-20.37
4824.000	Average	42.02	7.13	49.15	54.00	-4.85
7236.000	Peak	35.50	14.33	49.83	74.00	-24.17
7236.000	Average	25.08	14.33	39.41	54.00	-14.59

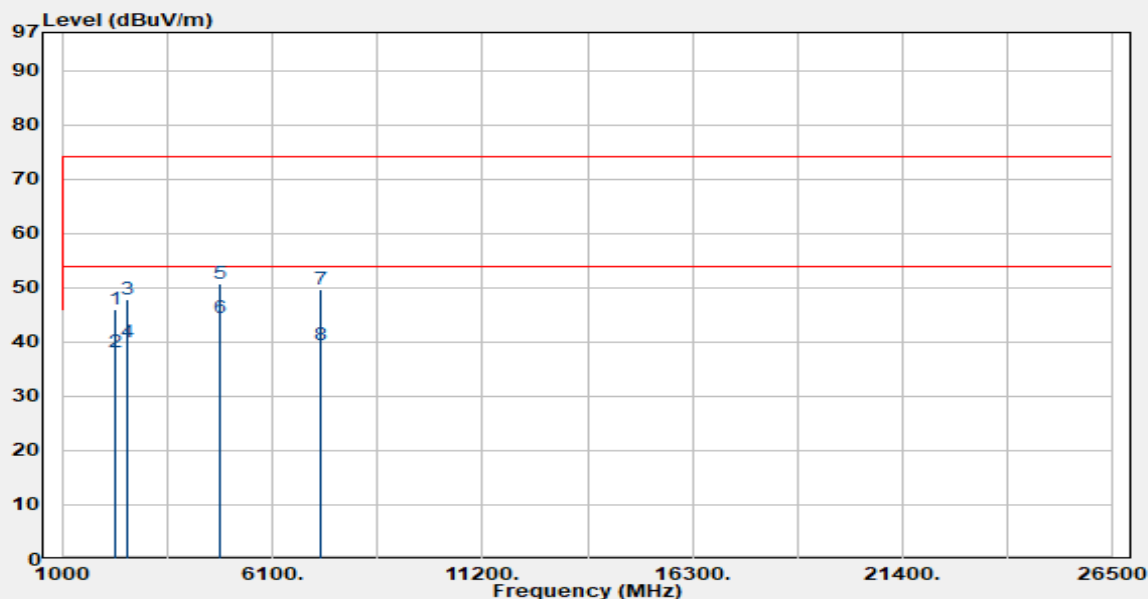
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Report Number :ER-2021-80032
Operation Mode :802.11b
Test Frequency :2412 MHz
Test Mode :Tx CH Low
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2234.400	Peak	44.83	1.19	46.02	74.00	-27.98
2234.400	Average	36.85	1.19	38.04	54.00	-15.96
2544.200	Peak	47.01	0.79	47.80	74.00	-26.20
2544.200	Average	39.09	0.79	39.88	54.00	-14.12
4824.000	Peak	43.49	7.13	50.62	74.00	-23.38
4824.000	Average	37.28	7.13	44.41	54.00	-9.59
7236.000	Peak	35.47	14.33	49.80	74.00	-24.20
7236.000	Average	25.06	14.33	39.39	54.00	-14.61

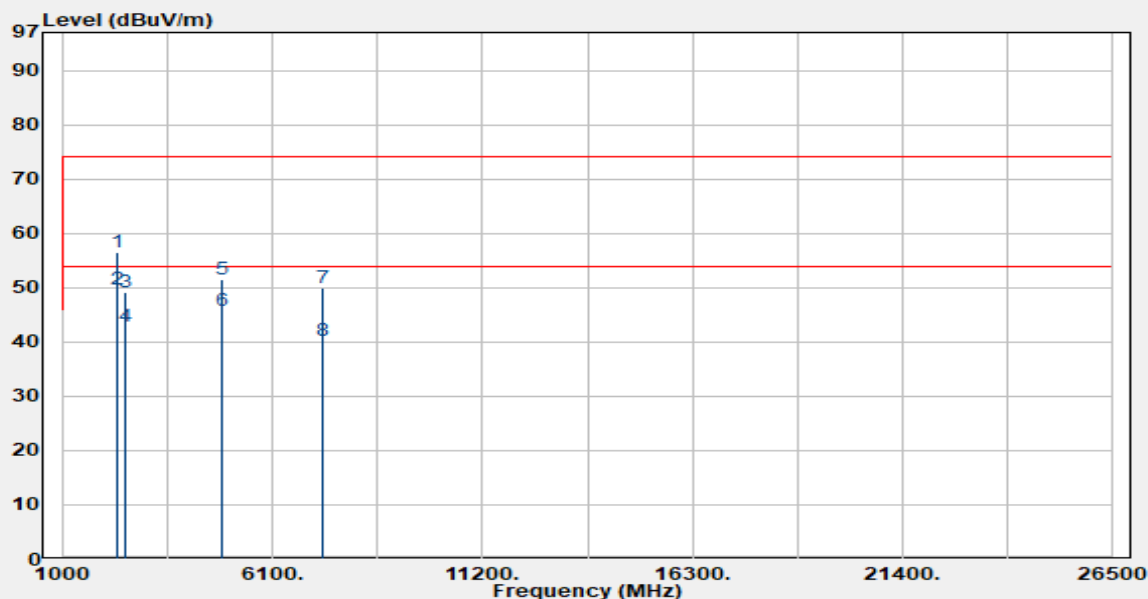
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Report Number :ER-2021-80032
Operation Mode :802.11b
Test Frequency :2437 MHz
Test Mode :Tx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
2312.500	Peak	55.26	1.16	56.42	74.00	-17.58
2312.500	Average	48.65	1.16	49.81	54.00	-4.19
2520.800	Peak	48.45	0.69	49.14	74.00	-24.86
2520.800	Average	42.14	0.69	42.83	54.00	-11.17
4874.000	Peak	44.03	7.51	51.54	74.00	-22.46
4874.000	Average	38.12	7.51	45.63	54.00	-8.37
7311.000	Peak	34.65	15.41	50.05	74.00	-23.95
7311.000	Average	24.81	15.41	40.22	54.00	-13.78

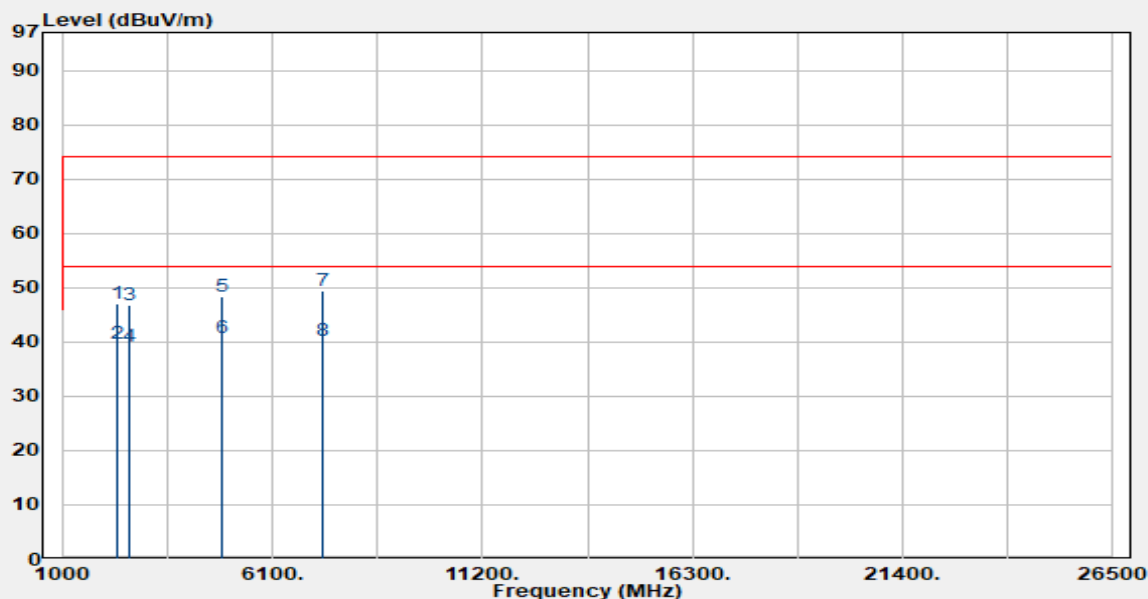
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Report Number :ER-2021-80032
Operation Mode :802.11b
Test Frequency :2437 MHz
Test Mode :Tx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2298.880	Peak	45.72	1.21	46.93	74.00	-27.07
2298.880	Average	38.37	1.21	39.58	54.00	-14.42
2578.600	Peak	45.74	0.98	46.72	74.00	-27.28
2578.600	Average	38.18	0.98	39.16	54.00	-14.84
4874.000	Peak	40.93	7.51	48.44	74.00	-25.56
4874.000	Average	33.17	7.51	40.68	54.00	-13.32
7311.000	Peak	33.93	15.41	49.34	74.00	-24.66
7311.000	Average	24.83	15.41	40.24	54.00	-13.76

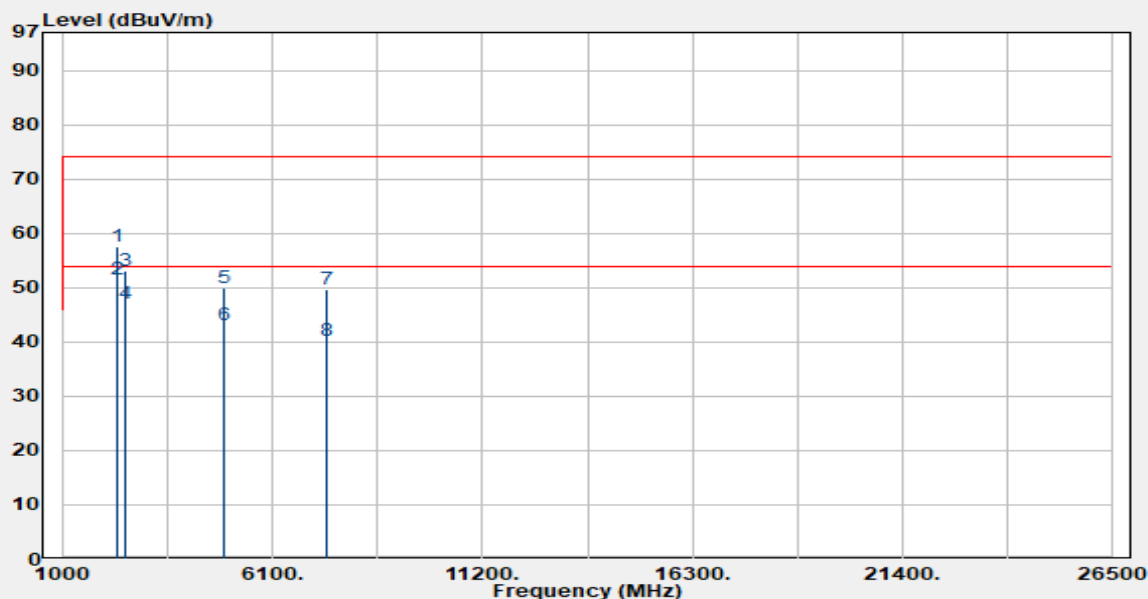
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Report Number :ER-2021-80032
Operation Mode :802.11b
Test Frequency :2462 MHz
Test Mode :Tx CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
2299.000	Peak	56.44	1.21	57.65	74.00	-16.35
2299.000	Average	50.34	1.21	51.55	54.00	-2.45
2522.700	Peak	52.32	0.70	53.02	74.00	-20.98
2522.700	Average	46.46	0.70	47.16	54.00	-6.84
4924.000	Peak	42.07	7.84	49.91	74.00	-24.09
4924.000	Average	35.22	7.84	43.06	54.00	-10.94
7386.000	Peak	34.94	14.75	49.69	74.00	-24.31
7386.000	Average	25.44	14.75	40.19	54.00	-13.81

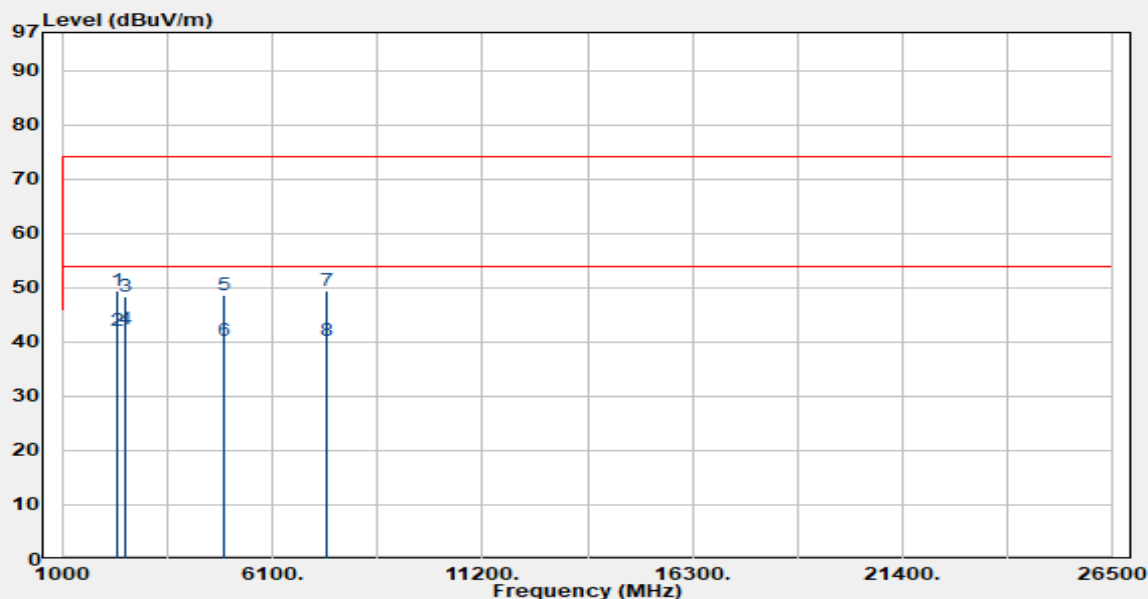
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Report Number :ER-2021-80032
Operation Mode :802.11b
Test Frequency :2462 MHz
Test Mode :Tx CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
2299.100	Peak	48.26	1.21	49.47	74.00	-24.53
2299.100	Average	40.86	1.21	42.07	54.00	-11.93
2519.200	Peak	47.74	0.68	48.42	74.00	-25.58
2519.200	Average	41.71	0.68	42.39	54.00	-11.61
4924.000	Peak	40.74	7.84	48.58	74.00	-25.42
4924.000	Average	32.31	7.84	40.15	54.00	-13.85
7386.000	Peak	34.58	14.75	49.33	74.00	-24.67
7386.000	Average	25.37	14.75	40.12	54.00	-13.88

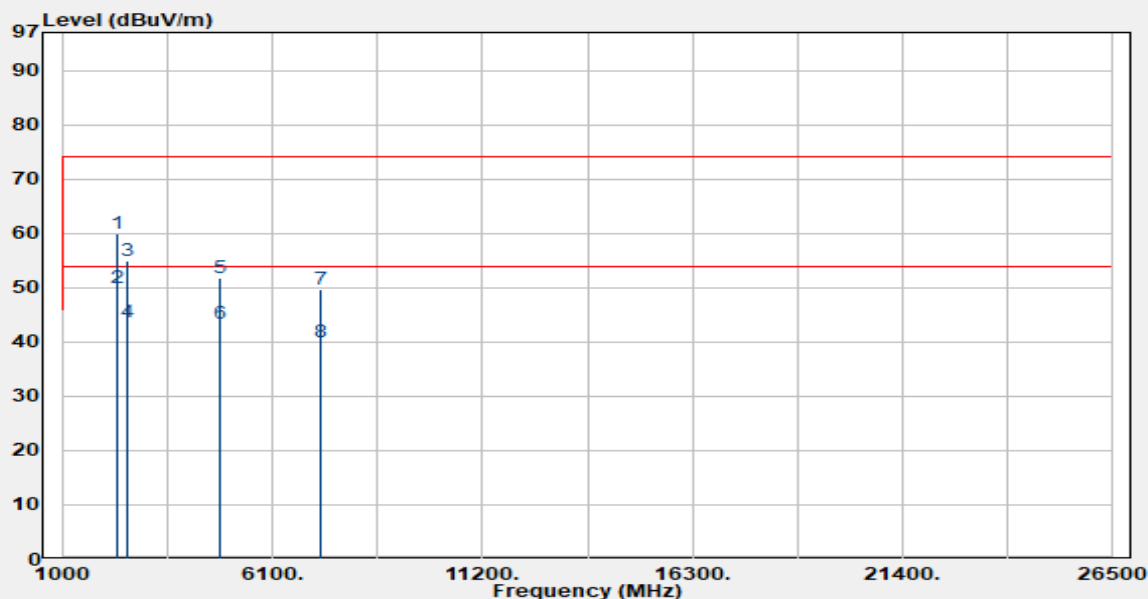
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Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2412 MHz
Test Mode :Tx CH Low
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2299.600	Peak	58.68	1.21	59.89	74.00	-14.11
2299.600	Average	48.84	1.21	50.05	54.00	-3.95
2529.300	Peak	54.24	0.73	54.97	74.00	-19.03
2529.300	Average	42.79	0.73	43.52	54.00	-10.48
4824.000	Peak	44.70	7.13	51.84	74.00	-22.16
4824.000	Average	36.35	7.13	43.48	54.00	-10.52
7236.000	Peak	35.42	14.33	49.75	74.00	-24.25
7236.000	Average	25.51	14.33	39.84	54.00	-14.16

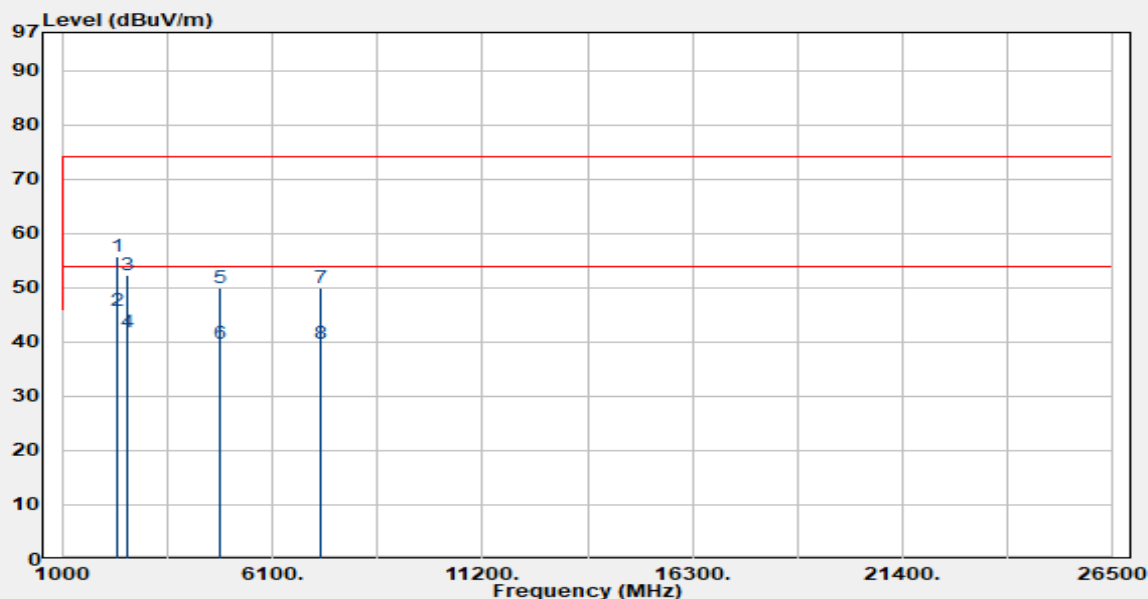
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Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2412 MHz
Test Mode :Tx CH Low
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2299.800	Peak	54.62	1.21	55.83	74.00	-18.17
2299.800	Average	44.46	1.21	45.67	54.00	-8.33
2530.500	Peak	51.56	0.73	52.29	74.00	-21.71
2530.500	Average	41.06	0.73	41.79	54.00	-12.21
4824.000	Peak	42.77	7.13	49.90	74.00	-24.10
4824.000	Average	32.55	7.13	39.68	54.00	-14.32
7236.000	Peak	35.66	14.33	50.00	74.00	-24.00
7236.000	Average	25.41	14.33	39.74	54.00	-14.26

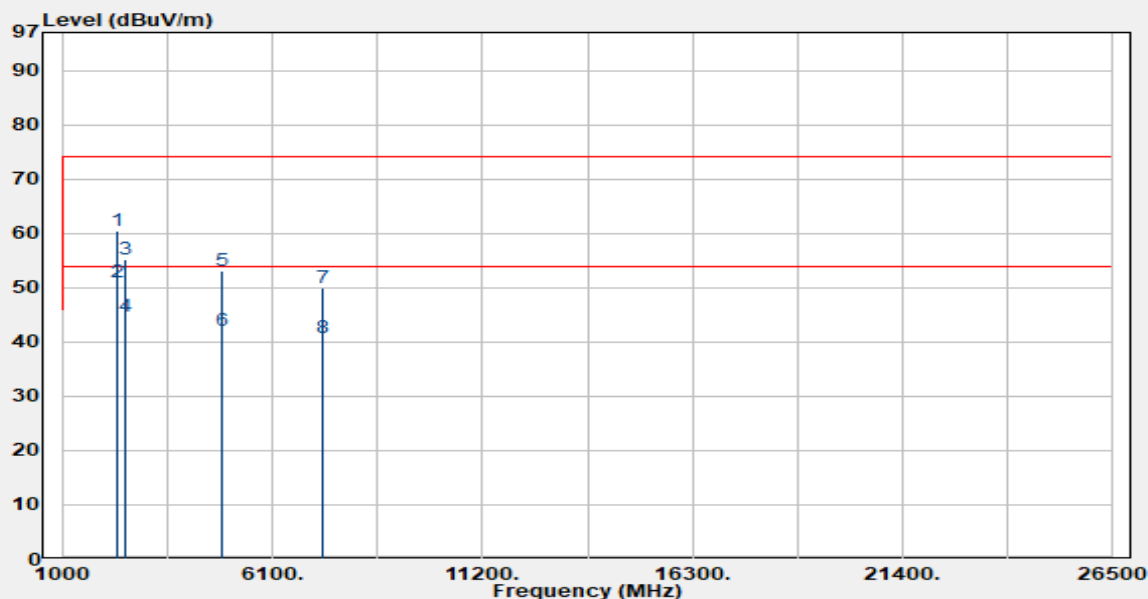
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Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2437 MHz
Test Mode :Tx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2299.900	Peak	59.33	1.21	60.54	74.00	-13.46
2299.900	Average	49.70	1.21	50.91	54.00	-3.09
2518.000	Peak	54.48	0.68	55.16	74.00	-18.84
2518.000	Average	44.14	0.68	44.82	54.00	-9.18
4874.000	Peak	45.47	7.51	52.99	74.00	-21.01
4874.000	Average	34.42	7.51	41.93	54.00	-12.07
7311.000	Peak	34.45	15.41	49.86	74.00	-24.14
7311.000	Average	25.36	15.41	40.77	54.00	-13.23

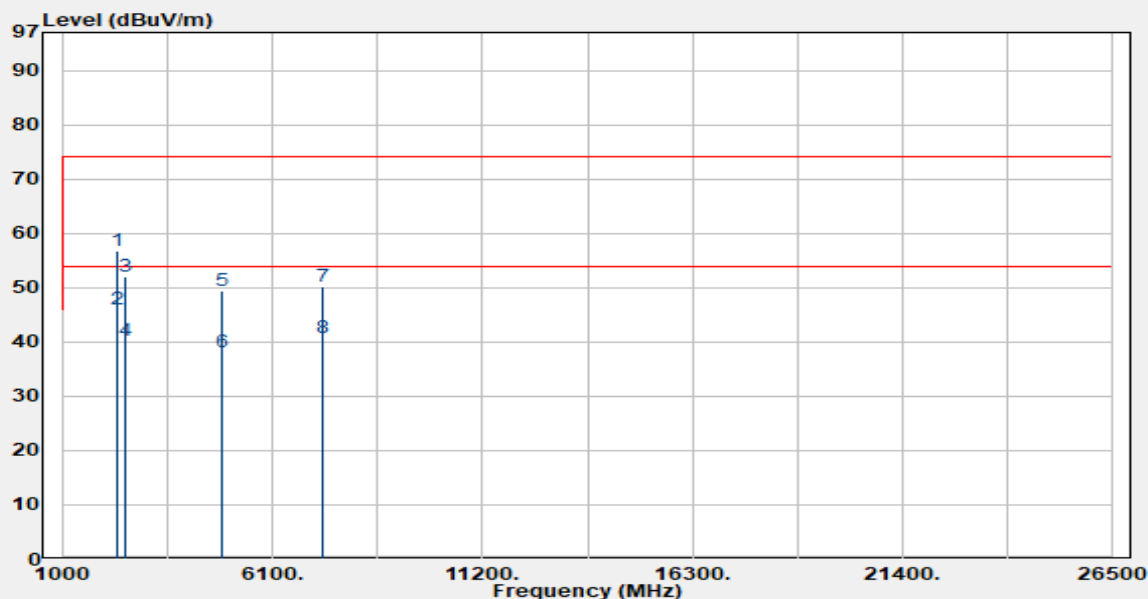
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Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2437 MHz
Test Mode :Tx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2299.900	Peak	55.66	1.21	56.87	74.00	-17.13
2299.900	Average	44.84	1.21	46.05	54.00	-7.95
2523.300	Peak	51.26	0.70	51.96	74.00	-22.04
2523.300	Average	39.39	0.70	40.09	54.00	-13.91
4874.000	Peak	41.84	7.51	49.35	74.00	-24.65
4874.000	Average	30.69	7.51	38.20	54.00	-15.80
7311.000	Peak	34.87	15.41	50.28	74.00	-23.72
7311.000	Average	25.35	15.41	40.76	54.00	-13.24

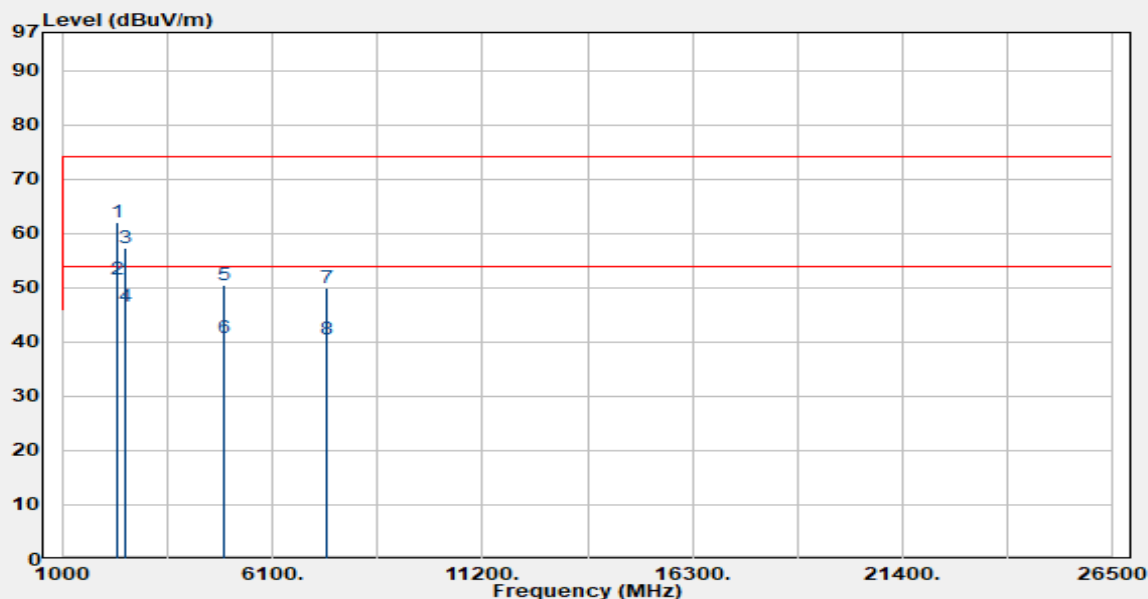
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Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2462 MHz
Test Mode :Tx CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2299.800	Peak	60.75	1.21	61.96	74.00	-12.04
2299.800	Average	50.28	1.21	51.49	54.00	-2.51
2523.100	Peak	56.49	0.70	57.19	74.00	-16.81
2523.100	Average	45.76	0.70	46.46	54.00	-7.54
4924.000	Peak	42.56	7.84	50.40	74.00	-23.60
4924.000	Average	33.01	7.84	40.85	54.00	-13.15
7386.000	Peak	35.15	14.75	49.90	74.00	-24.10
7386.000	Average	25.85	14.75	40.60	54.00	-13.40

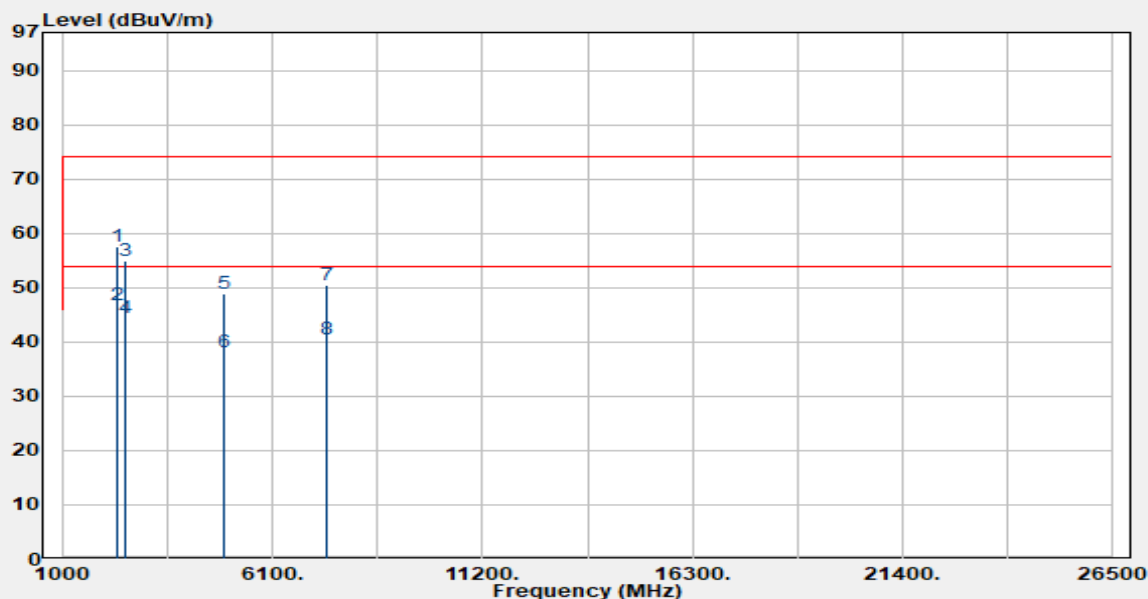
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Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2462 MHz
Test Mode :Tx CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2299.600	Peak	56.24	1.21	57.45	74.00	-16.55
2299.600	Average	45.60	1.21	46.81	54.00	-7.19
2520.400	Peak	54.14	0.69	54.83	74.00	-19.17
2520.400	Average	43.67	0.69	44.36	54.00	-9.64
4924.000	Peak	41.11	7.84	48.95	74.00	-25.05
4924.000	Average	30.24	7.84	38.08	54.00	-15.92
7386.000	Peak	35.80	14.75	50.56	74.00	-23.44
7386.000	Average	25.72	14.75	40.47	54.00	-13.53

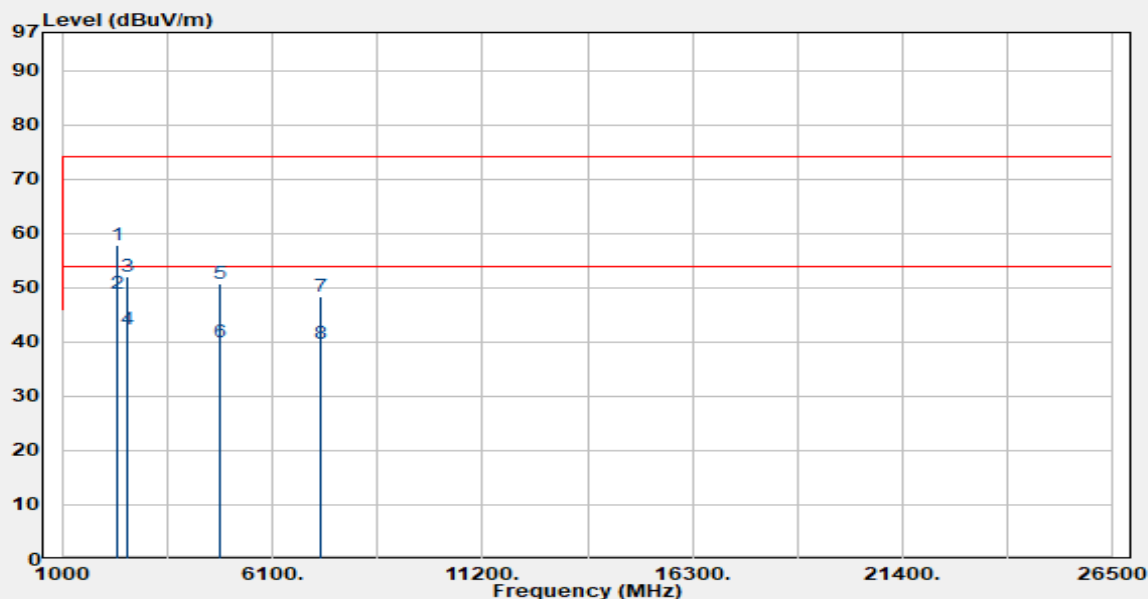
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Report Number :ER-2021-80032
Operation Mode :802.11n20
Test Frequency :2412 MHz
Test Mode :Tx CH Low
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
2299.600	Peak	56.75	1.21	57.96	74.00	-16.04
2299.600	Average	47.56	1.21	48.77	54.00	-5.23
2540.100	Peak	51.21	0.77	51.98	74.00	-22.02
2540.100	Average	41.68	0.77	42.45	54.00	-11.55
4824.000	Peak	43.64	7.13	50.78	74.00	-23.22
4824.000	Average	32.86	7.13	39.99	54.00	-14.01
7236.000	Peak	33.93	14.33	48.26	74.00	-25.74
7236.000	Average	25.31	14.33	39.64	54.00	-14.36

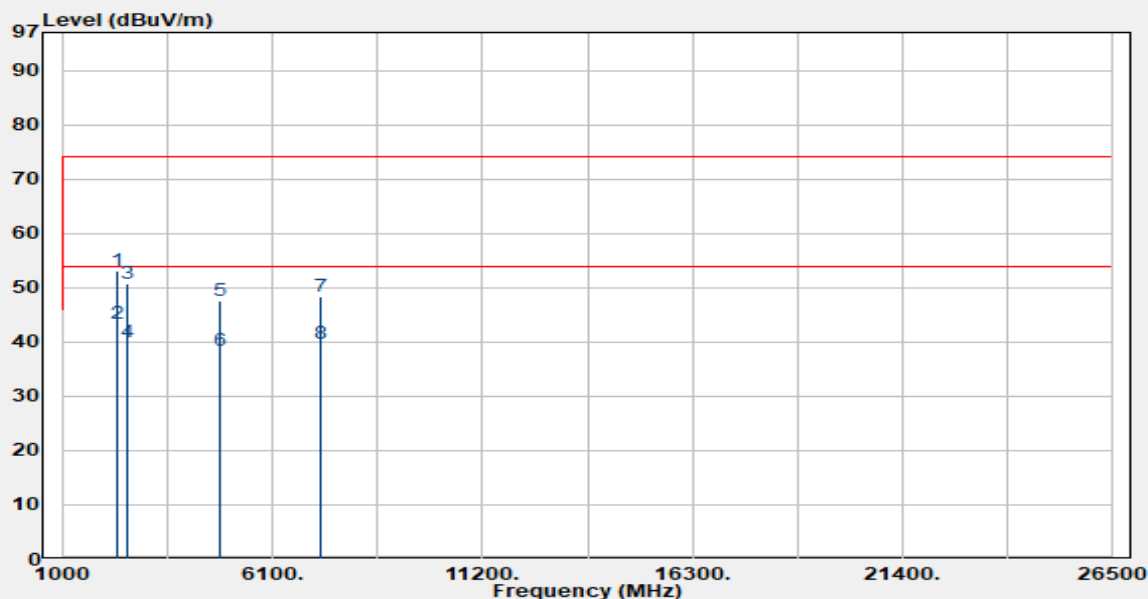
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Report Number :ER-2021-80032
Operation Mode :802.11n20
Test Frequency :2412 MHz
Test Mode :Tx CH Low
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2299.900	Peak	51.92	1.21	53.13	74.00	-20.87
2299.900	Average	42.13	1.21	43.34	54.00	-10.66
2537.900	Peak	49.88	0.76	50.64	74.00	-23.36
2537.900	Average	39.27	0.76	40.03	54.00	-13.97
4824.000	Peak	40.53	7.13	47.66	74.00	-26.34
4824.000	Average	31.30	7.13	38.43	54.00	-15.57
7236.000	Peak	33.92	14.33	48.25	74.00	-25.75
7236.000	Average	25.41	14.33	39.74	54.00	-14.26

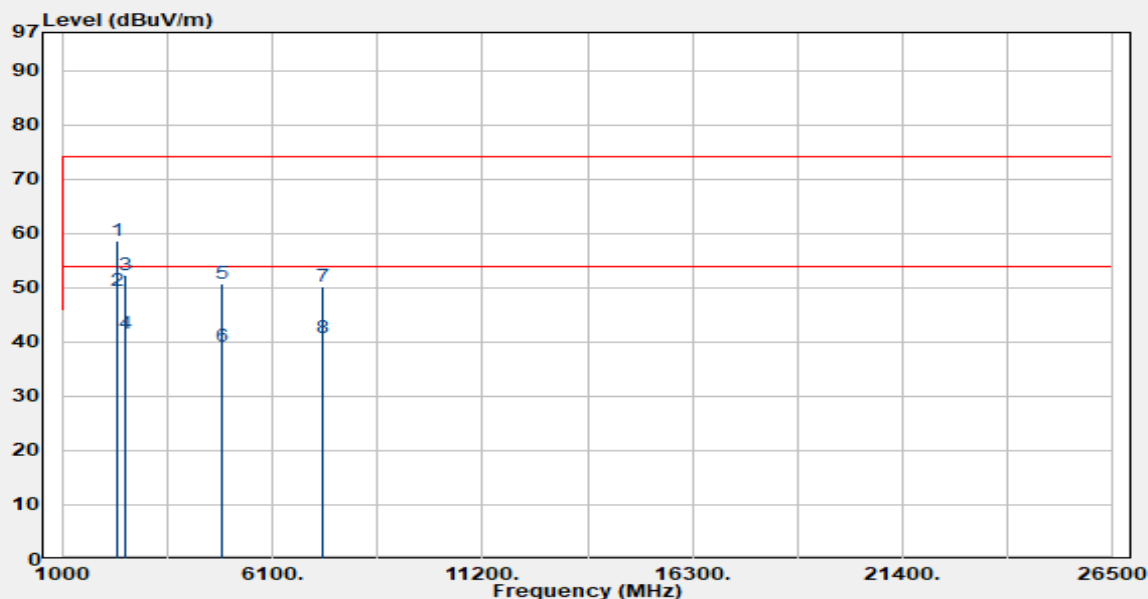
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Report Number :ER-2021-80032
Operation Mode :802.11n20
Test Frequency :2437 MHz
Test Mode :Tx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
2299.500	Peak	57.32	1.21	58.53	74.00	-15.47
2299.500	Average	48.21	1.21	49.42	54.00	-4.58
2520.300	Peak	51.71	0.69	52.40	74.00	-21.60
2520.300	Average	40.81	0.69	41.50	54.00	-12.50
4874.000	Peak	43.31	7.51	50.82	74.00	-23.18
4874.000	Average	31.53	7.51	39.04	54.00	-14.96
7311.000	Peak	34.83	15.41	50.24	74.00	-23.76
7311.000	Average	25.31	15.41	40.72	54.00	-13.28

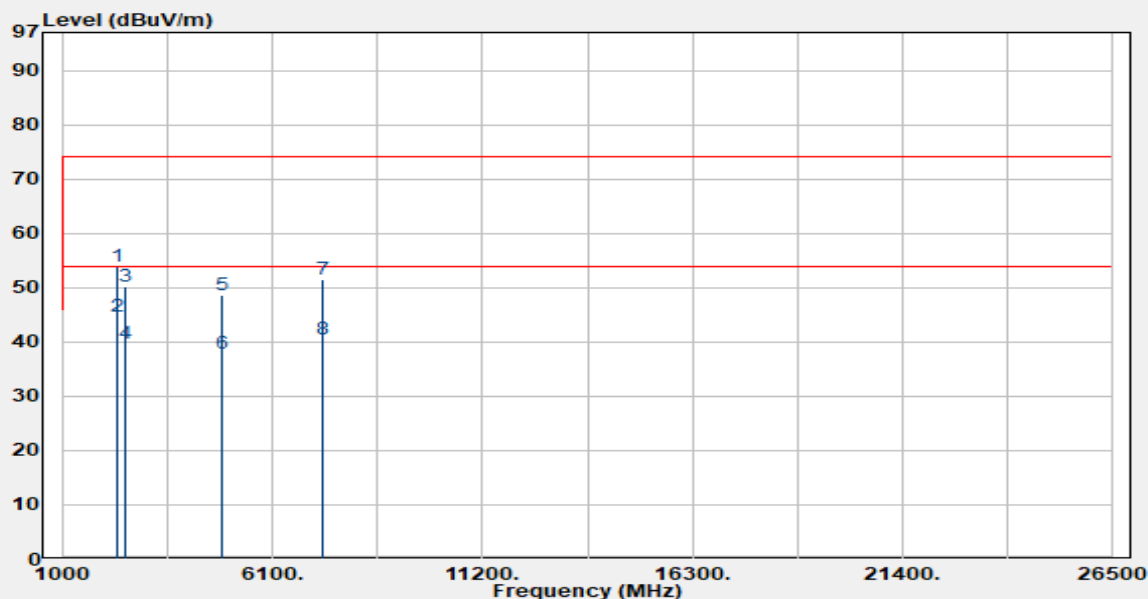
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Report Number :ER-2021-80032
Operation Mode :802.11n20
Test Frequency :2437 MHz
Test Mode :Tx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2299.800	Peak	52.73	1.21	53.94	74.00	-20.06
2299.800	Average	43.43	1.21	44.64	54.00	-9.36
2519.300	Peak	49.48	0.68	50.16	74.00	-23.84
2519.300	Average	39.04	0.68	39.72	54.00	-14.28
4874.000	Peak	41.20	7.51	48.71	74.00	-25.29
4874.000	Average	30.29	7.51	37.80	54.00	-16.20
7311.000	Peak	36.16	15.41	51.57	74.00	-22.43
7311.000	Average	25.20	15.41	40.61	54.00	-13.39

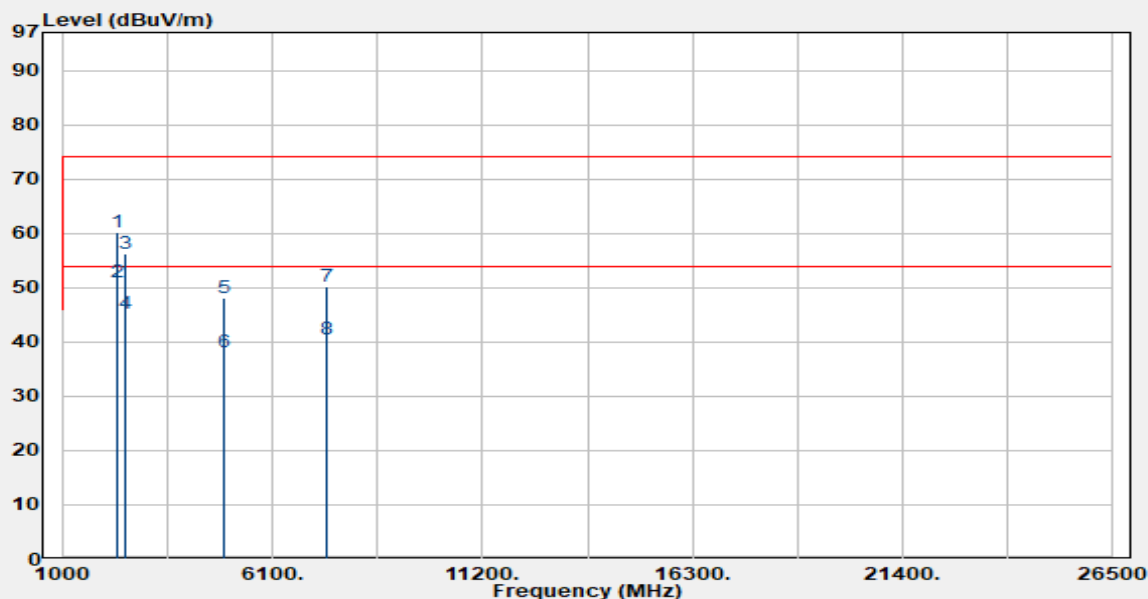
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Report Number :ER-2021-80032
Operation Mode :802.11n20
Test Frequency :2462 MHz
Test Mode :Tx CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
2299.900	Peak	59.05	1.21	60.26	74.00	-13.74
2299.900	Average	49.87	1.21	51.08	54.00	-2.92
2522.600	Peak	55.45	0.70	56.15	74.00	-17.85
2522.600	Average	44.63	0.70	45.33	54.00	-8.67
4924.000	Peak	40.24	7.84	48.08	74.00	-25.92
4924.000	Average	30.34	7.84	38.18	54.00	-15.82
7386.000	Peak	35.46	14.75	50.21	74.00	-23.79
7386.000	Average	25.60	14.75	40.35	54.00	-13.65

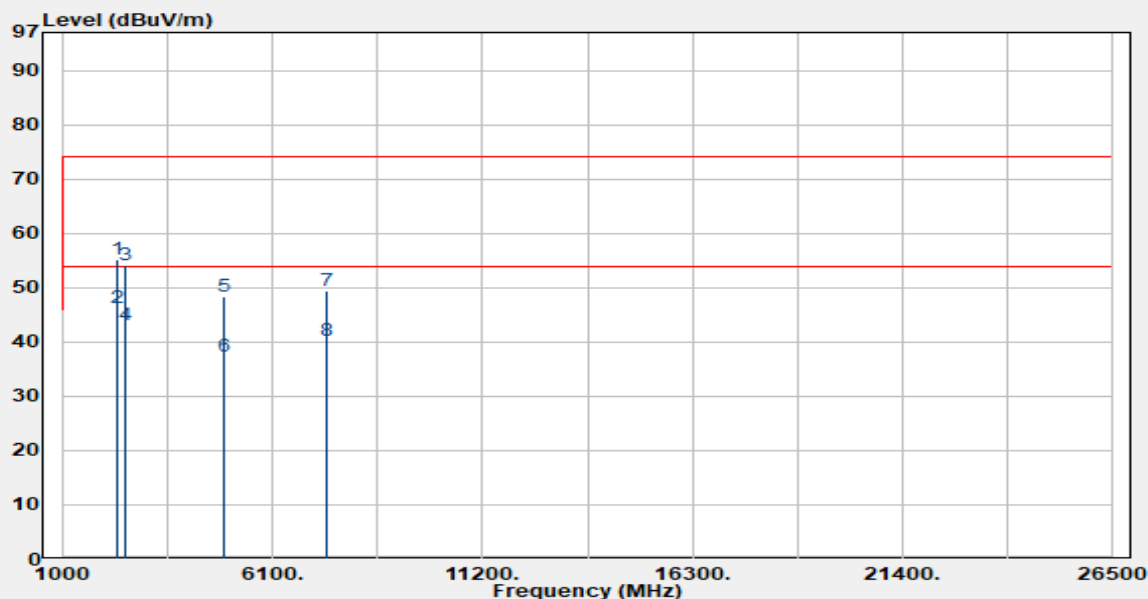
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Report Number :ER-2021-80032
Operation Mode :802.11n20
Test Frequency :2462 MHz
Test Mode :Tx CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2299.700	Peak	54.11	1.21	55.32	74.00	-18.68
2299.700	Average	44.97	1.21	46.18	54.00	-7.82
2520.600	Peak	53.42	0.69	54.11	74.00	-19.89
2520.600	Average	42.38	0.69	43.07	54.00	-10.93
4924.000	Peak	40.40	7.84	48.24	74.00	-25.76
4924.000	Average	29.48	7.84	37.32	54.00	-16.68
7386.000	Peak	34.64	14.75	49.39	74.00	-24.61
7386.000	Average	25.48	14.75	40.23	54.00	-13.77

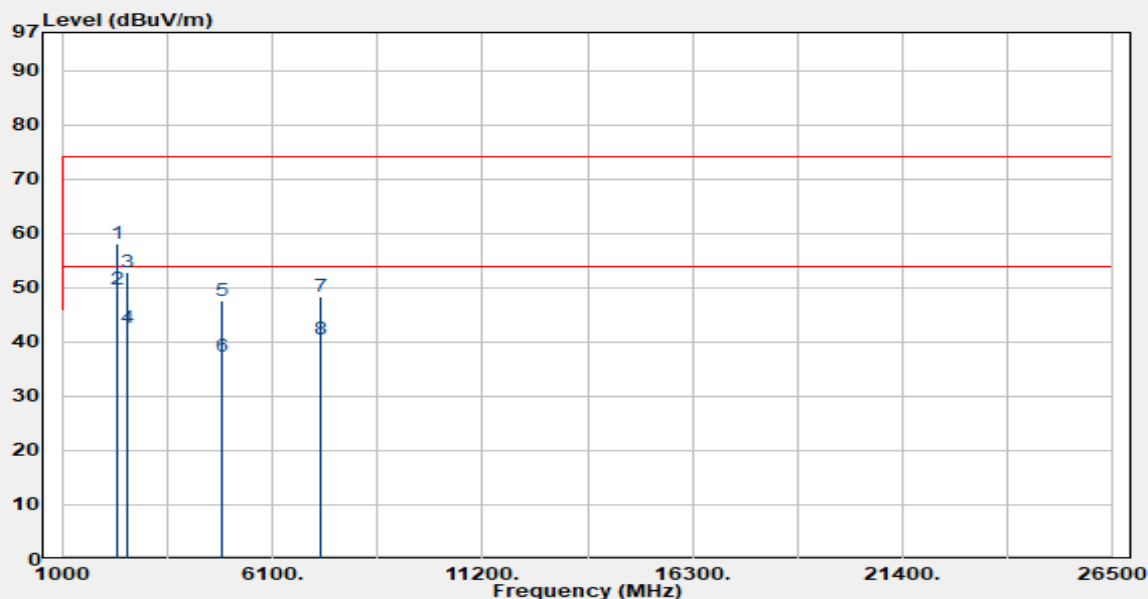
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Report Number :ER-2021-80032
Operation Mode :802.11n40
Test Frequency :2422 MHz
Test Mode :Tx CH Low
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
2299.900	Peak	56.88	1.21	58.09	74.00	-15.91
2299.900	Average	48.37	1.21	49.58	54.00	-4.42
2537.000	Peak	52.11	0.76	52.87	74.00	-21.13
2537.000	Average	41.79	0.76	42.55	54.00	-11.45
4844.000	Peak	40.34	7.12	47.46	74.00	-26.54
4844.000	Average	30.29	7.12	37.41	54.00	-16.59
7266.000	Peak	33.87	14.63	48.50	74.00	-25.50
7266.000	Average	25.81	14.63	40.44	54.00	-13.56

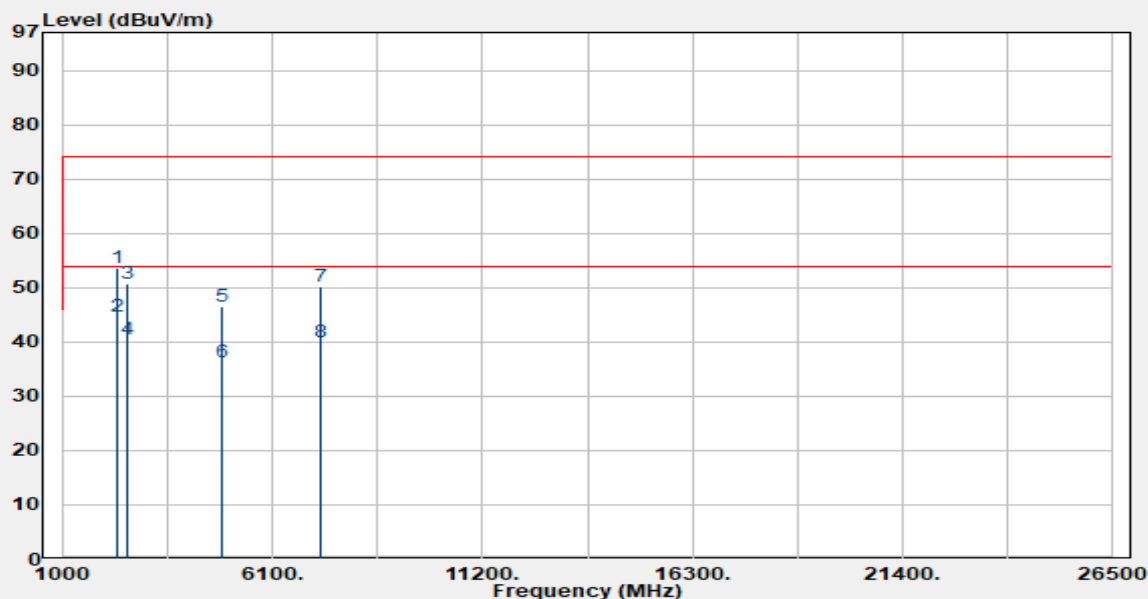
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Report Number :ER-2021-80032
Operation Mode :802.11n40
Test Frequency :2422 MHz
Test Mode :Tx CH Low
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2299.100	Peak	52.37	1.21	53.58	74.00	-20.42
2299.100	Average	43.55	1.21	44.76	54.00	-9.24
2538.800	Peak	49.99	0.76	50.75	74.00	-23.25
2538.800	Average	39.82	0.76	40.58	54.00	-13.42
4844.000	Peak	39.43	7.12	46.55	74.00	-27.45
4844.000	Average	29.14	7.12	36.26	54.00	-17.74
7266.000	Peak	35.61	14.63	50.24	74.00	-23.76
7266.000	Average	25.37	14.63	40.00	54.00	-14.00

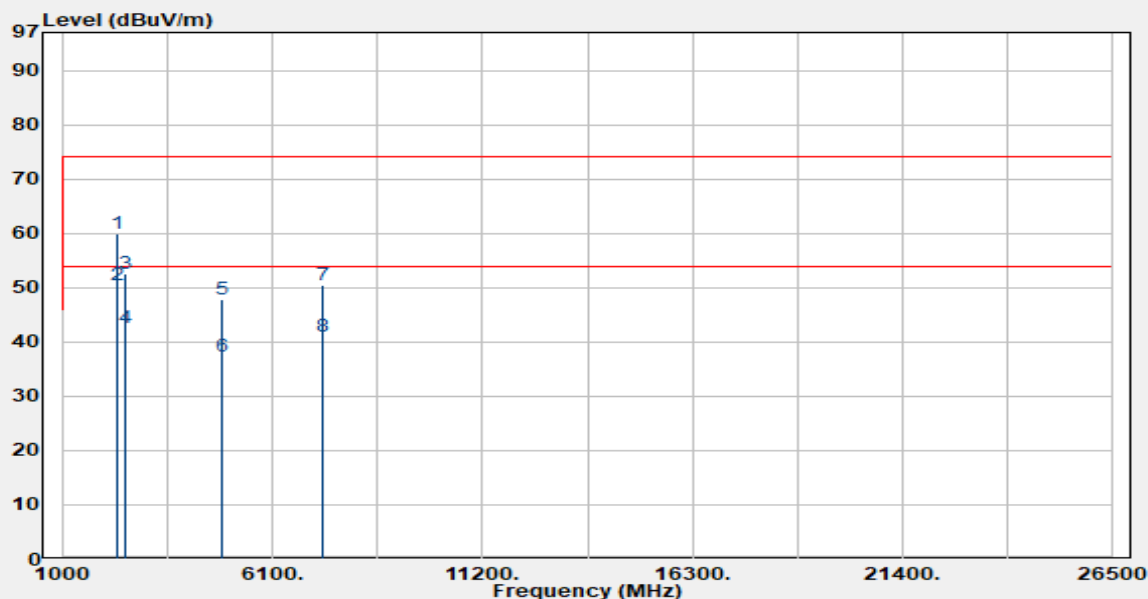
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Report Number :ER-2021-80032
Operation Mode :802.11n40
Test Frequency :2437 MH
Test Mode :Tx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
2299.900	Peak	58.75	1.21	59.96	74.00	-14.04
2299.900	Average	49.23	1.21	50.44	54.00	-3.56
2523.900	Peak	51.88	0.70	52.58	74.00	-21.42
2523.900	Average	41.94	0.70	42.64	54.00	-11.36
4874.000	Peak	40.22	7.51	47.73	74.00	-26.27
4874.000	Average	29.80	7.51	37.31	54.00	-16.69
7311.000	Peak	35.18	15.41	50.59	74.00	-23.41
7311.000	Average	25.53	15.41	40.94	54.00	-13.06

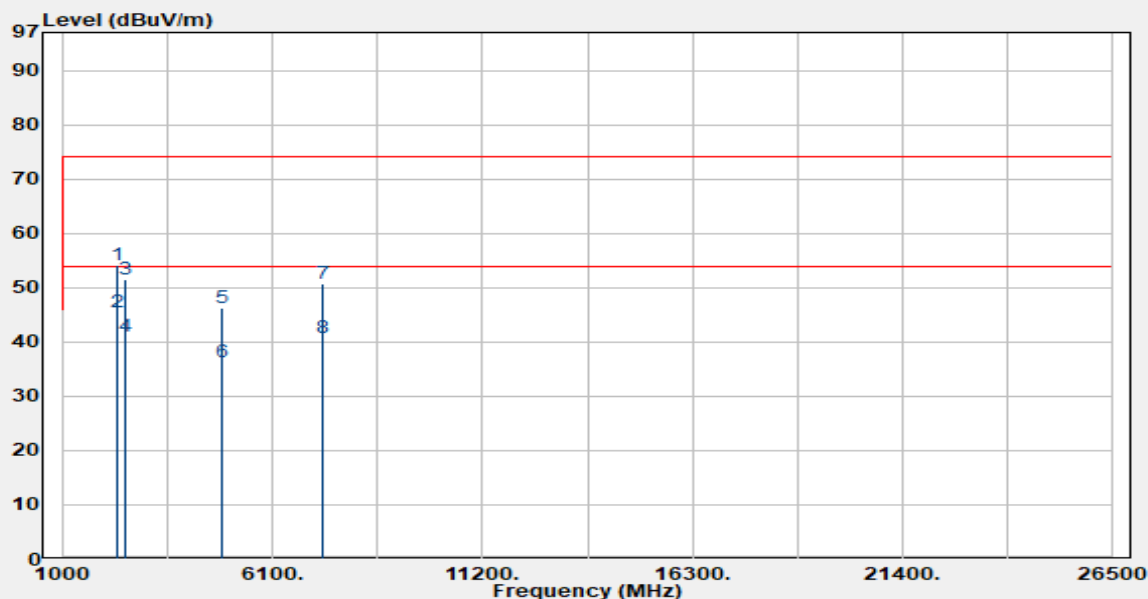
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Report Number :ER-2021-80032
Operation Mode :802.11n40
Test Frequency :2437 MH
Test Mode :Tx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
2299.900	Peak	52.84	1.21	54.05	74.00	-19.95
2299.900	Average	44.18	1.21	45.39	54.00	-8.61
2521.800	Peak	50.88	0.70	51.58	74.00	-22.42
2521.800	Average	40.43	0.70	41.13	54.00	-12.87
4874.000	Peak	38.65	7.51	46.16	74.00	-27.84
4874.000	Average	28.88	7.51	36.39	54.00	-17.61
7311.000	Peak	35.44	15.41	50.85	74.00	-23.15
7311.000	Average	25.32	15.41	40.73	54.00	-13.27

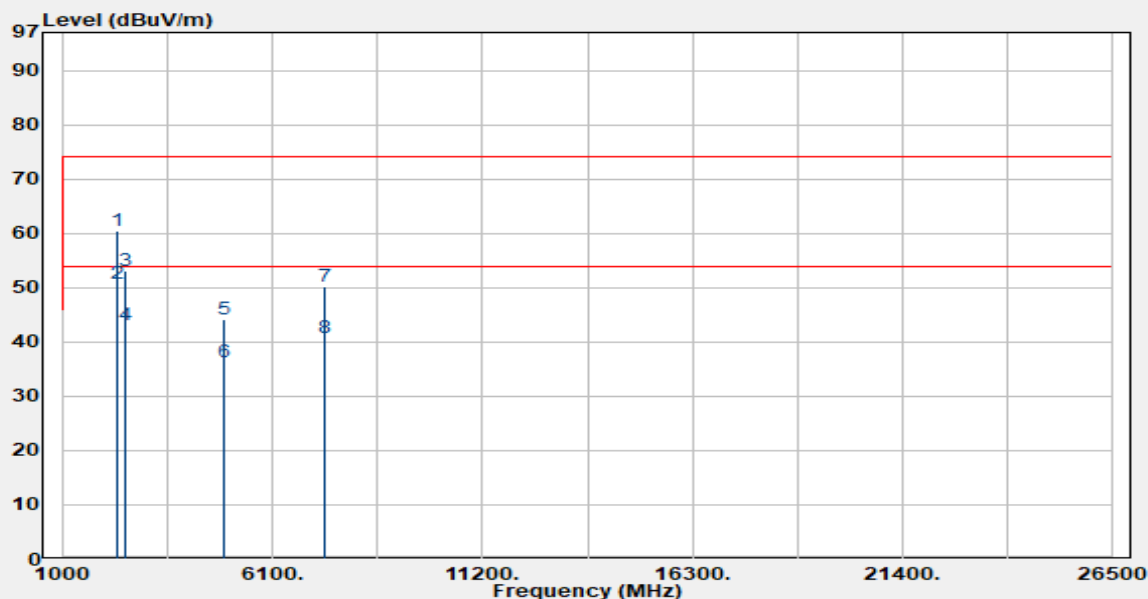
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Report Number :ER-2021-80032
Operation Mode :802.11n40
Test Frequency :2452 MH
Test Mode :Tx CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
2299.800	Peak	59.21	1.21	60.42	74.00	-13.58
2299.800	Average	49.50	1.21	50.71	54.00	-3.29
2522.000	Peak	52.46	0.70	53.16	74.00	-20.84
2522.000	Average	42.50	0.70	43.20	54.00	-10.80
4904.000	Peak	36.15	7.92	44.07	74.00	-29.93
4904.000	Average	28.41	7.92	36.33	54.00	-17.67
7356.000	Peak	35.22	14.93	50.15	74.00	-23.85
7356.000	Average	25.76	14.93	40.69	54.00	-13.31

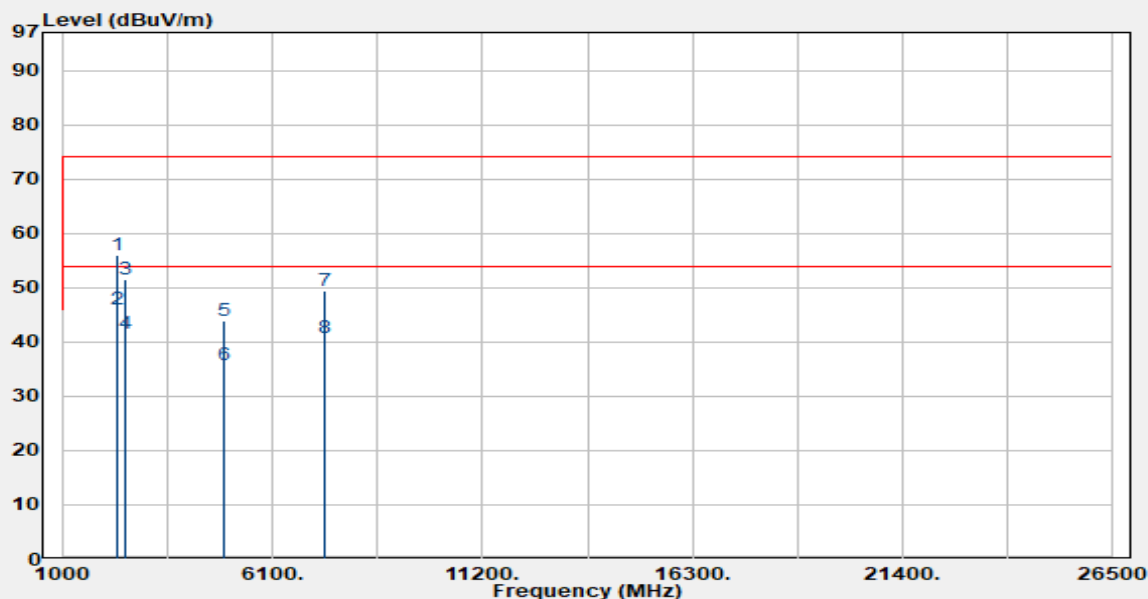
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Report Number :ER-2021-80032
Operation Mode :802.11n40
Test Frequency :2452 MH
Test Mode :Tx CH High
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2299.800	Peak	54.91	1.21	56.12	74.00	-17.88
2299.800	Average	44.69	1.21	45.90	54.00	-8.10
2521.200	Peak	50.82	0.69	51.51	74.00	-22.49
2521.200	Average	40.74	0.69	41.43	54.00	-12.57
4904.000	Peak	35.99	7.92	43.91	74.00	-30.09
4904.000	Average	27.71	7.92	35.63	54.00	-18.37
7356.000	Peak	34.51	14.93	49.45	74.00	-24.55
7356.000	Average	25.82	14.93	40.75	54.00	-13.25

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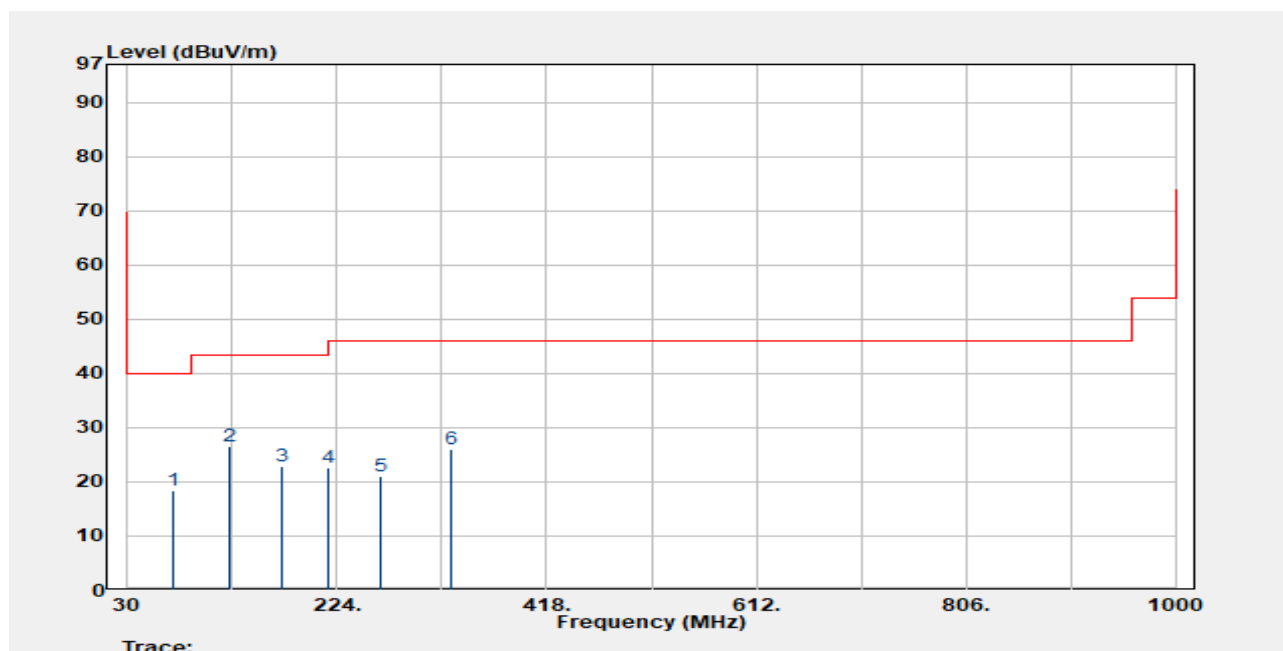
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13.6.3 接收機場強輻射

Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2437 MHz
Test Mode :Rx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.710	Peak	29.09	-10.63	18.47	40.00	-21.53
124.090	Peak	35.74	-9.30	26.44	43.50	-17.06
173.560	Peak	30.98	-8.11	22.87	43.50	-20.63
216.240	Peak	31.90	-9.29	22.61	46.00	-23.39
263.770	Peak	28.29	-7.35	20.93	46.00	-25.07
328.760	Peak	31.31	-5.24	26.07	46.00	-19.93

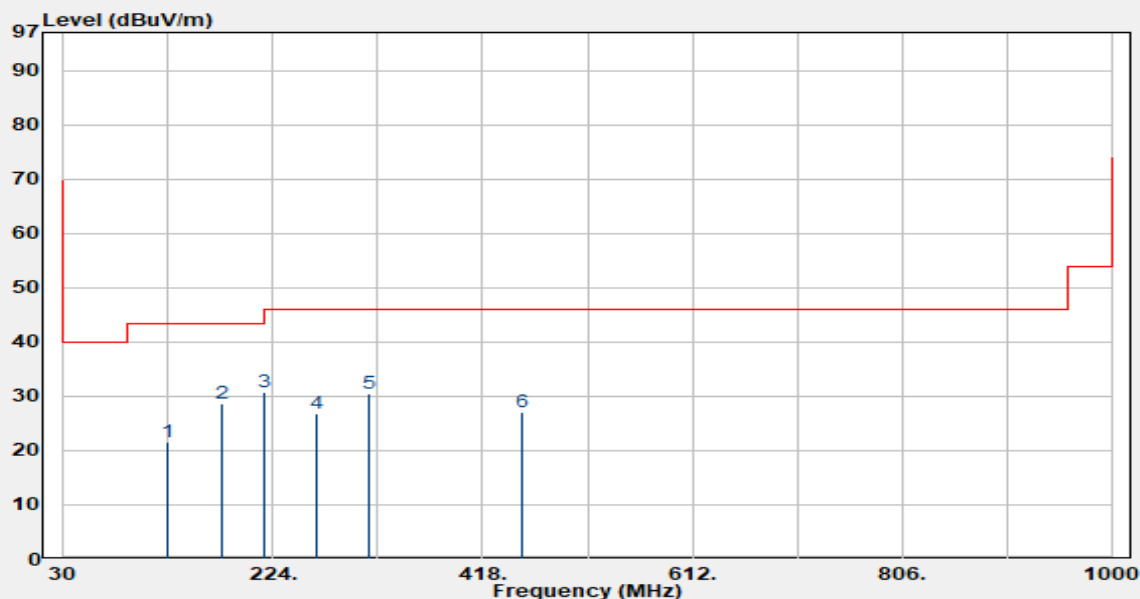
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Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2437 MHz
Test Mode :Rx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
127.000	Peak	30.44	-8.87	21.57	43.50	-21.93
176.470	Peak	37.22	-8.45	28.76	43.50	-14.74
216.240	Peak	39.96	-9.29	30.68	46.00	-15.32
263.770	Peak	34.20	-7.35	26.85	46.00	-19.15
313.240	Peak	36.32	-5.88	30.44	46.00	-15.56
453.890	Peak	29.47	-2.42	27.05	46.00	-18.95

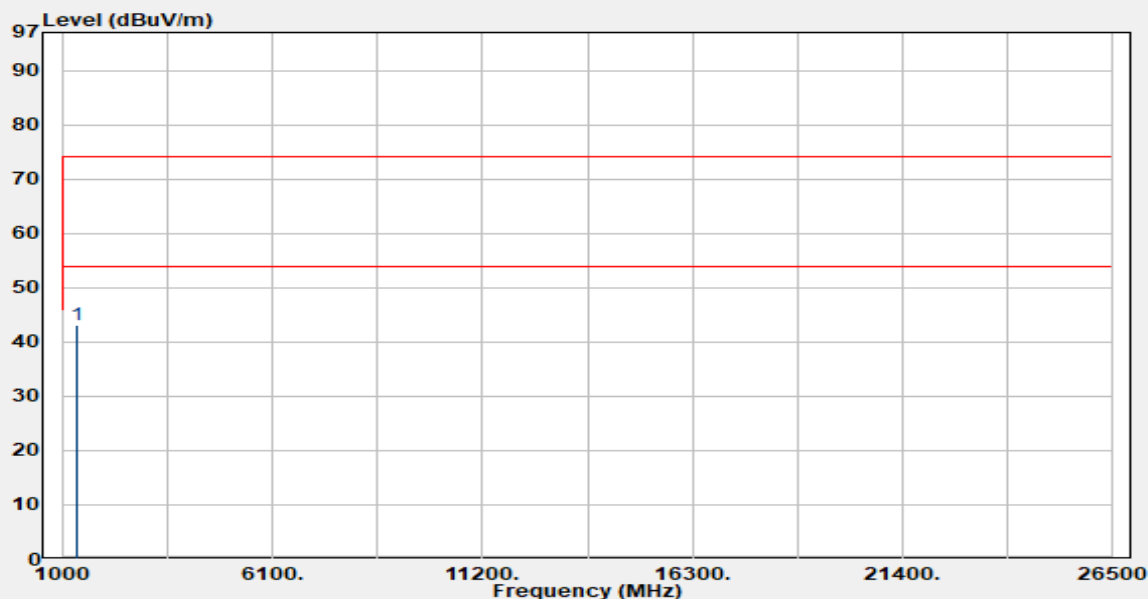
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Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2437 MH
Test Mode :Rx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Vertical
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
1315.000	Peak	46.37	-3.16	43.21	74.00	-30.79

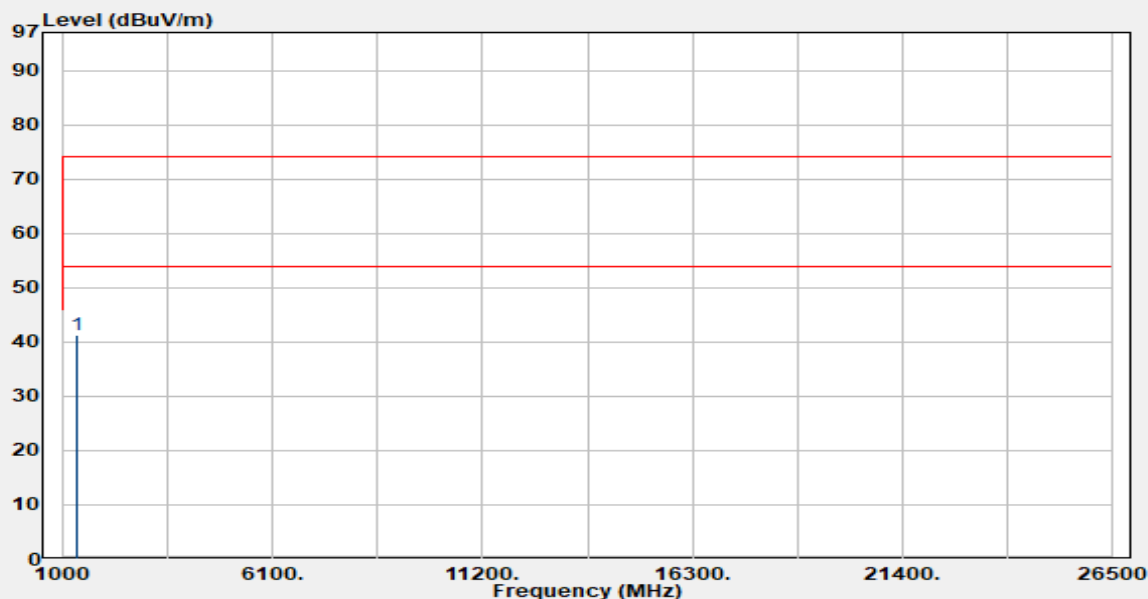
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Report Number :ER-2021-80032
Operation Mode :802.11g
Test Frequency :2437 MH
Test Mode :Rx CH Mid
EUT Pol :E1 Plane

Test Site :SAC 3
Test Date :2021-09-16
Temp./Humi. :26.2/62
Antenna Pol. :Horizontal
Engineer :Nick Lin



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
1315.000	Peak	44.42	-3.16	41.26	74.00	-32.74

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14 功率密度量測

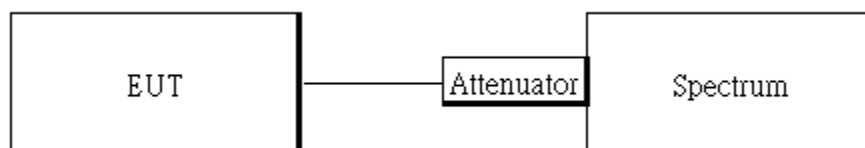
14.1 適用標準

依據 NCC 低功率射頻器材技術規範 4.10.1.6(2) (B)規定，對數位調變之展頻系統，在使用頻率範圍之任意 3kHz 頻寬內，由發射機傳導至天線之峰值發射電功率密度在任意期間內，皆不得大於 8dBm。

14.2 量測儀器

Conducted Emission Test Site: Conducted 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY59071571	05/26/2021	05/25/2022
Attenuator	Mini-Circuit	BW-S10W2+	2	12/16/2020	12/15/2021
DC Block	Mini-Circuits	BLK-18-S+	1	12/16/2020	12/15/2021

14.3 測試配置



14.4 量測方法

1. Set analyzer center frequency to DTS channel center frequency.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW = 3 kHz & VBW = 10 kHz.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. MIMO mode: offset is set with "measure and add 10 Log (N)" to measurement for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna, cable loss is specified below.

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Note:

For the test of MIMO mode, the highest emission of worst case employing Measure and add 10 log (N) technical is reported on this report after the comparison between Main Antenna at single transmitting mode and Aux that yields the higher value. The MIMO transmitting mode produces higher value of outcome.

14.5 天線增益及輸出功率限值計算

As per section F. 2). e). (ii) of FCC KDB 662911 D01

If antenna gains are not equal and each transmit antenna is driven by only one spatial stream, directional gain may be calculated by either of the following formulas.

$$\bullet \quad DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

NSS = the number of independent spatial streams of data;

NANT = the total number of antennas

$g_{j,k}$ = / 20 10Gk if the kth antenna is being fed by spatial stream j, or zero if it is not;

G_k is the gain in dBi of the kth antenna.

The antenna gain is not greater than 6 dBi. Therefore, reduction of power is not required.

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14.6 量測結果

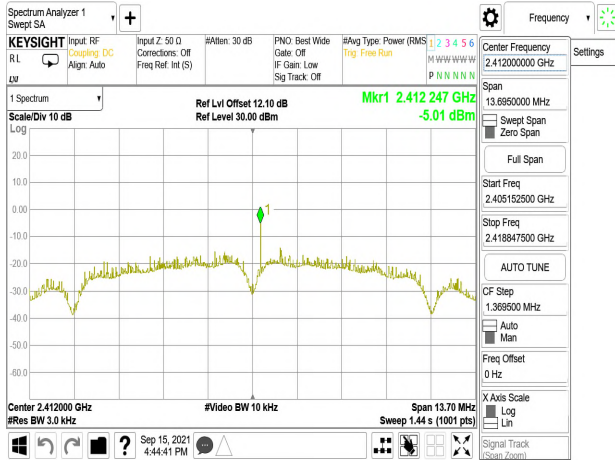
POWER DENSITY 802.11b					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-5.01	-14.24	-4.52	8.00	PASS
2437	-4.03	-2.81	-0.37	8.00	PASS
2462	-0.07	-14.38	0.09	8.00	PASS
POWER DENSITY 802.11g					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-16.74	-16.02	-13.35	8.00	PASS
2437	-16.49	-16.00	-13.23	8.00	PASS
2462	-16.31	-15.16	-12.69	8.00	PASS
POWER DENSITY 802.11n HT20					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-16.52	-16.05	-13.27	8.00	PASS
2437	-16.21	-16.28	-13.23	8.00	PASS
2462	-16.59	-15.53	-13.02	8.00	PASS
POWER DENSITY 802.11n HT40					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2422	-20.54	-19.63	-17.05	8.00	PASS
2437	-19.64	-18.17	-15.83	8.00	PASS
2452	-20.56	-19.72	-17.11	8.00	PASS

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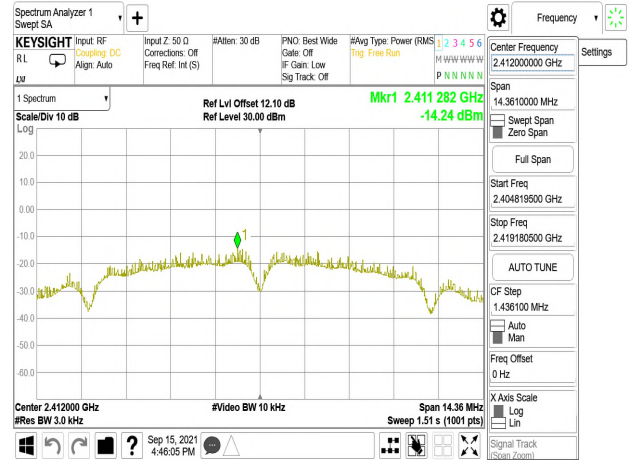
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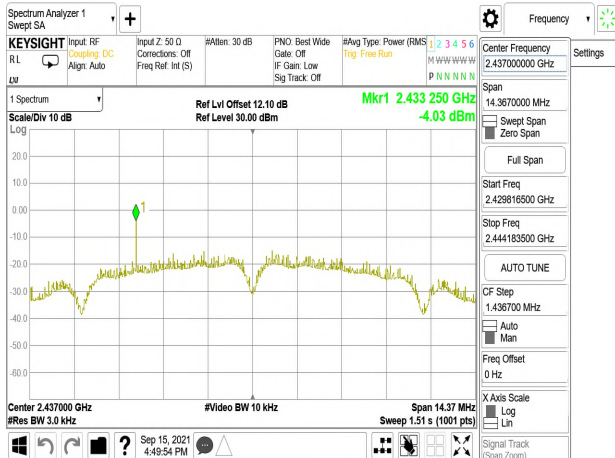
802.11b_20MHz_Chain0_2412MHz



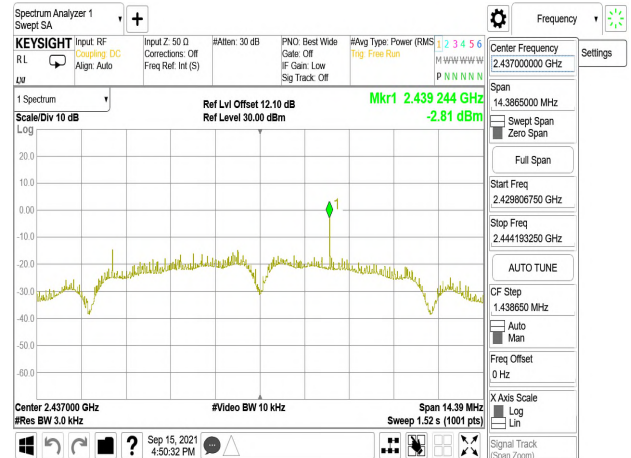
802.11b_20MHz_Chain1_2412MHz



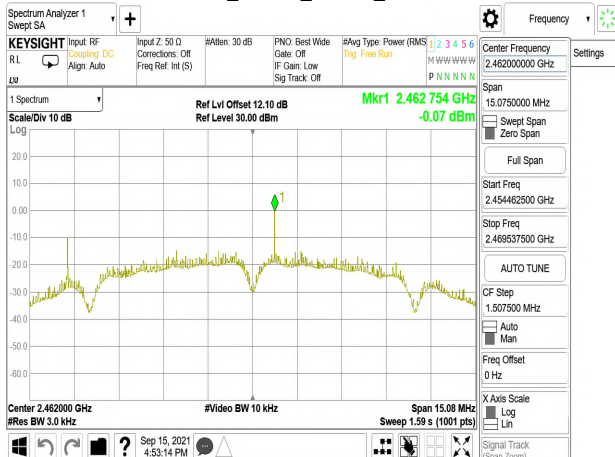
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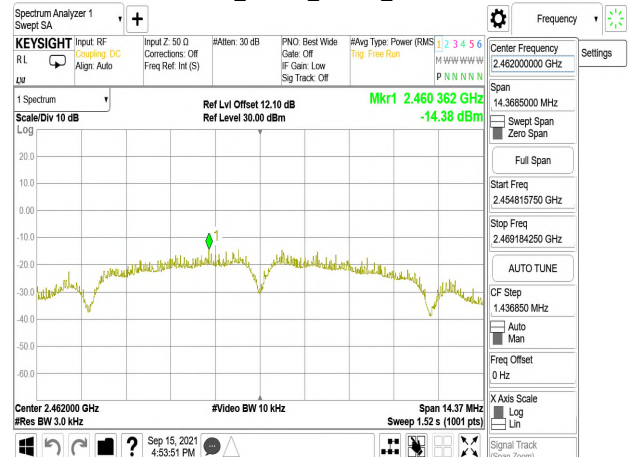
802.11b_20MHz_Chain1_2437MHz



802.11b_20MHz_Chain0_2462MHz



802.11b_20MHz_Chain1_2462MHz



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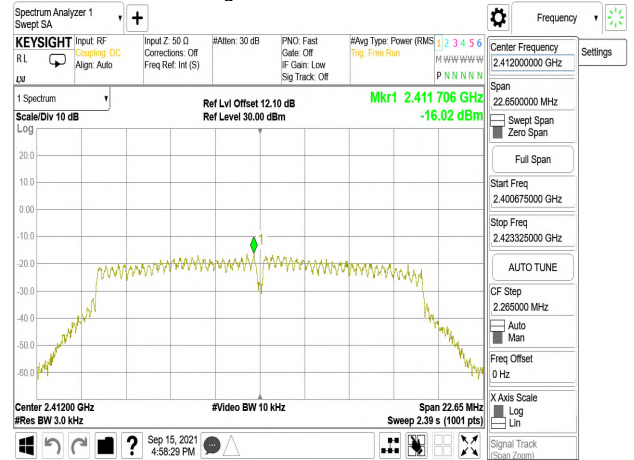
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802.11g_20MHz_Chain0_2412MHz



802.11g_20MHz_Chain1_2412MHz



802.11g_20MHz_Chain0_2437MHz



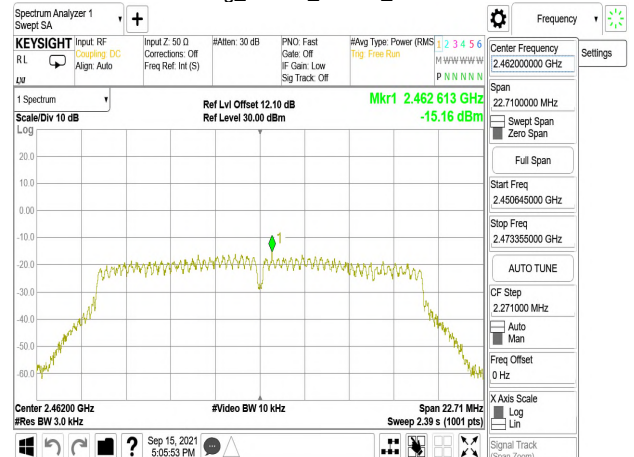
802.11g_20MHz_Chain1_2437MHz



802.11g_20MHz_Chain0_2462MHz



802.11g_20MHz_Chain1_2462MHz

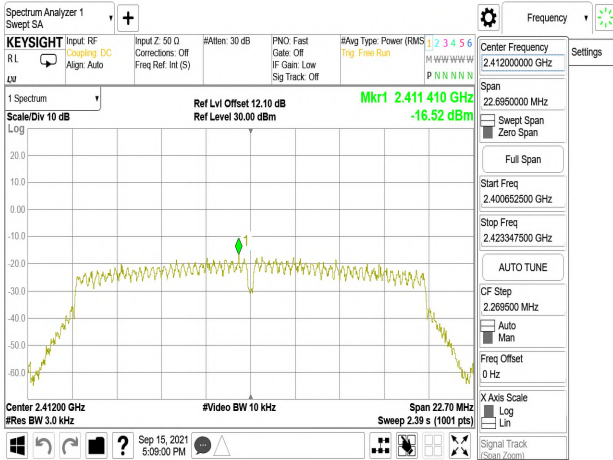


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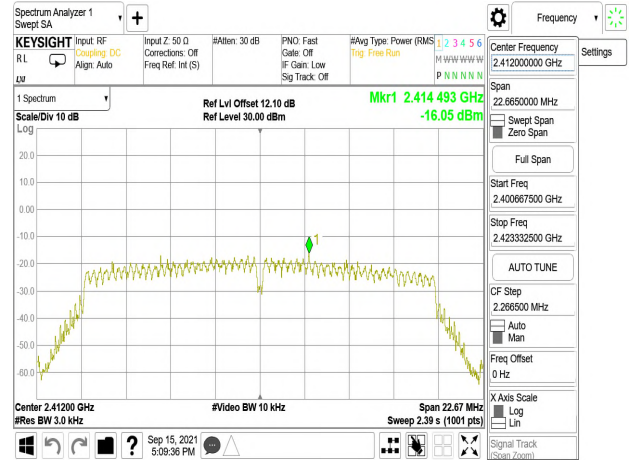
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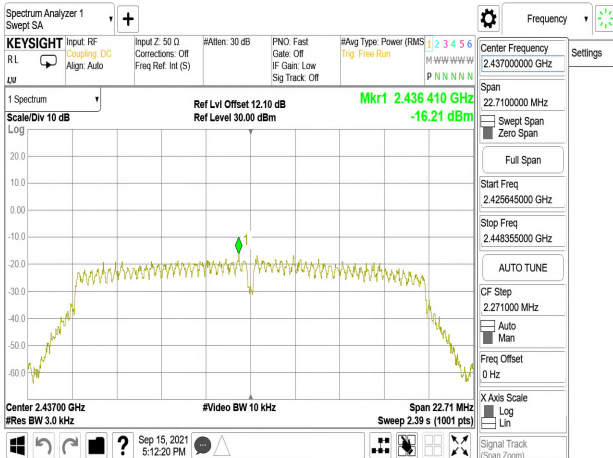
802.11n_20MHz_Chain0_2412MHz



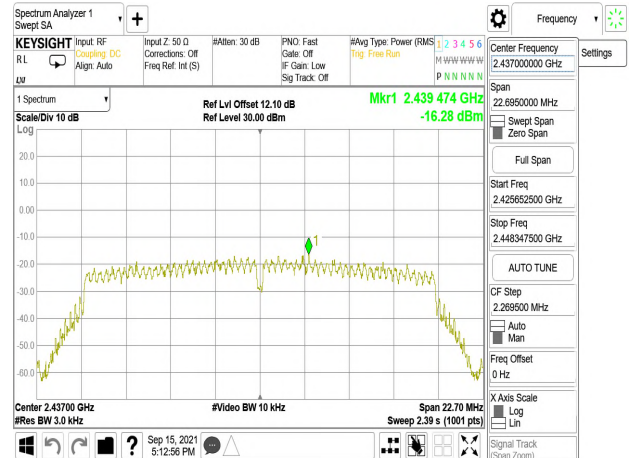
802.11n_20MHz_Chain1_2412MHz



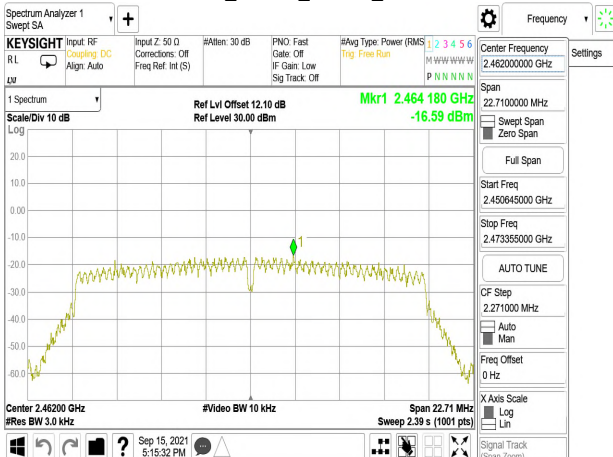
802.11n_20MHz_Chain0_2437MHz



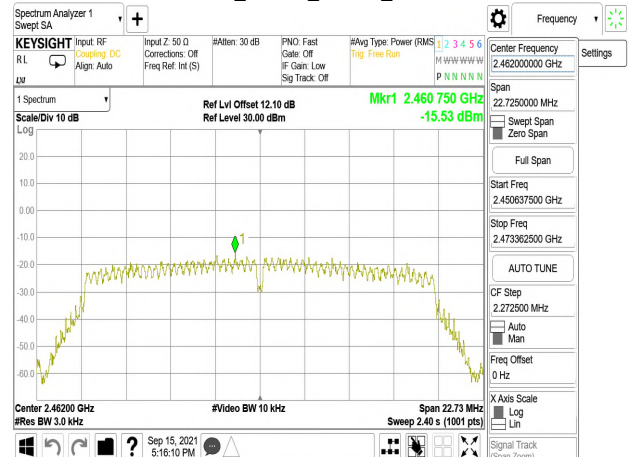
802.11n_20MHz_Chain1_2437MHz



802.11n_20MHz_Chain0_2462MHz



802.11n_20MHz_Chain1_2462MHz

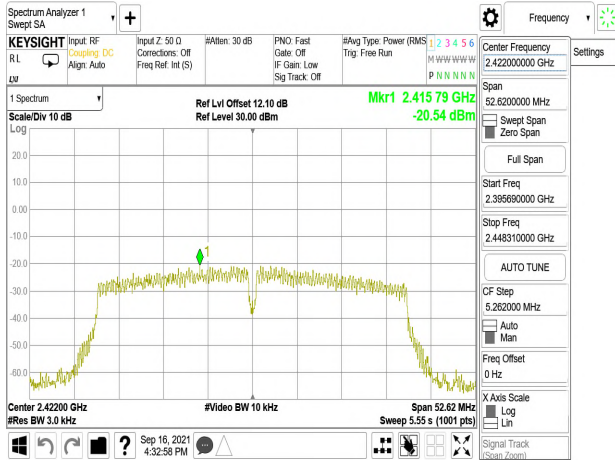


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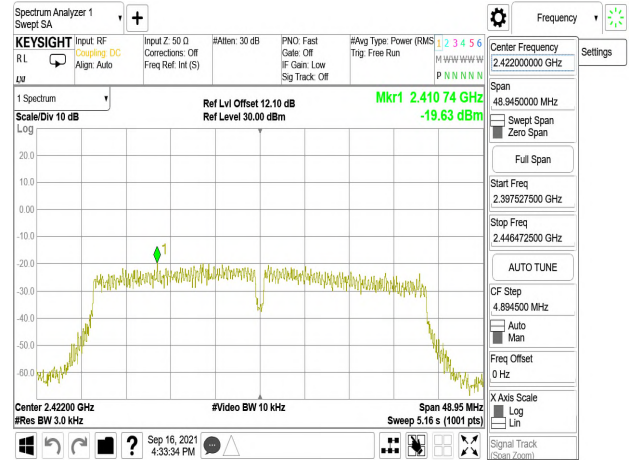
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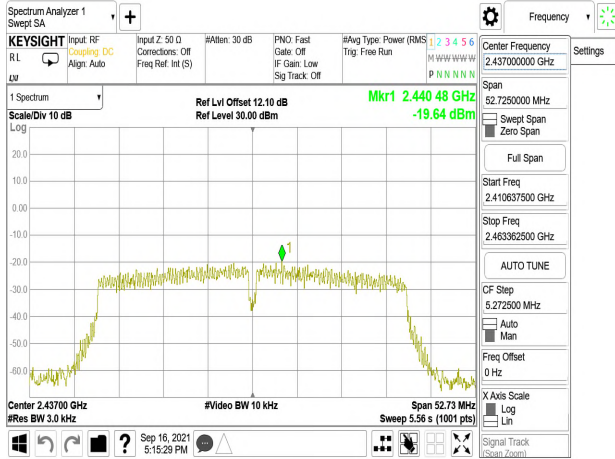
802.11n_40MHz_Chain0_2422MHz



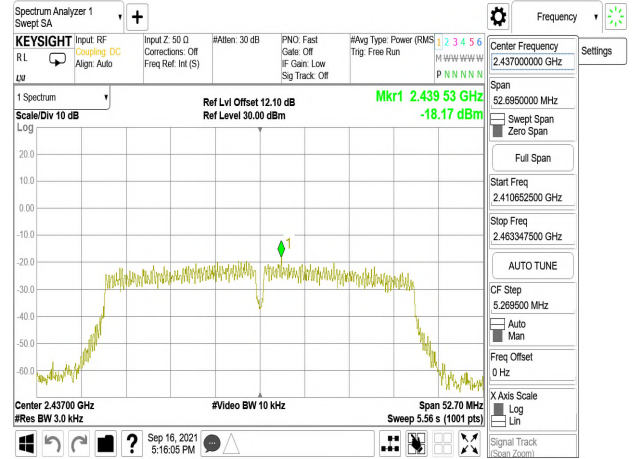
802.11n_40MHz_Chain1_2422MHz



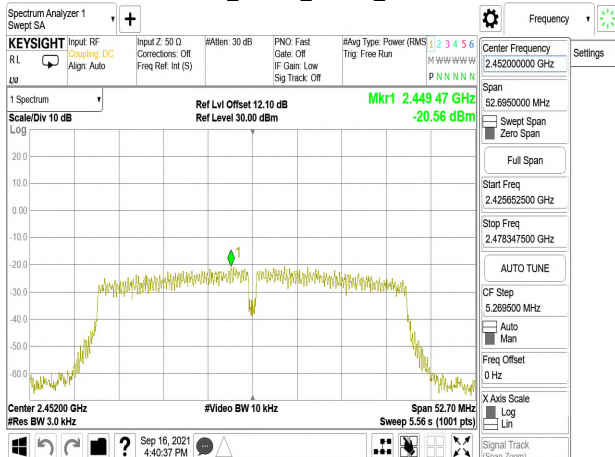
802.11n_40MHz_Chain0_2437MHz



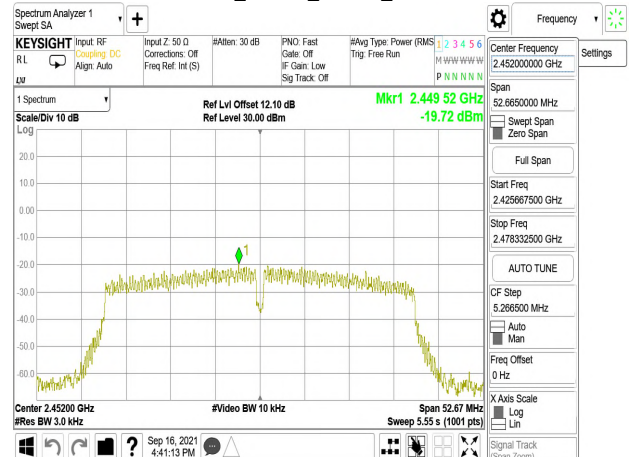
802.11n_40MHz_Chain1_2437MHz



802.11n_40MHz_Chain0_2452MHz



802.11n_40MHz_Chain1_2452MHz



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~ End of Report ~

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SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan/新北市五股區新北產業園區五工路 134 號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.sgs.com.tw

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